A Clinical Lecture

ON

THE KINKS WHICH DEVELOP IN OUR DRAINAGE SYSTEM IN CHRONIC INTESTINAL STASIS.

DELIVERED AT GUY'S HOSPITAL, MARCH 22ND,

BY

W. ARBUTHNOT LANE, M.S., F.R.C.S.,

SURGEON TO GUY'S HOSPITAL, AND SENIOR SURGEON TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, W.C.

GENTLEMEN,—I would call attention to our drainage apparatus in the present condition of civilization, and would point out to you how difficult it is in the circumstances to render it efficient for the purpose in hand—namely, to transmit its contents at such a rate that they shall not have time to undergo such a degree of decomposition as will produce harm to the individual by the absorption of the products.

Let us regard the gastro-intestinal tract as it exists when the erect position of the trunk is assumed, which is the case from the time one gets up till one goes to bed. In other words, except for an average of about seven hours in the twenty-four, there exists a constant tendency to the falling of the viscera in the abdomen.

Consider the stomach, which is held immovably in position by the œsophagus, which forms its chief ligament. The drag of the contents of the stomach, augmented by that of the loaded transverse colon, transmitted to the stomach through the great omentum, tends to displace the stomach downwards. This displacement is opposed by the œsophagus and by the lesser omentum, which is a comparatively feeble structure, and ill fitted to oppose this displacement.

A new ligament representing the crystallization of lines of resistance forms between the pylorus and the under surface of the liver in front of the transverse fissure extending along the cystic duct and gall bladder. This ligament, though not very thick, offers a very definite resistance to the downward displacement of the pylorus, and when the stomach is distended it tends to kink and occlude the pylorus.

The chief tearing strain upon the stomach when it is distended, and especially when its weight is increased by that of the loaded transverse colon, is experienced along the lesser curvature. If a stomach be made in rubber and be fixed in position by ties representing the œsophagus and the newly developed ligament, which for all practical purpose is a local hypertrophy of the lesser omentum, and if the stomach be filled with fluid, it will tear along its lesser curvature, and especially so in the vicinity of the pyloric ligament, which gets a very limited grip of the stomach. If the pyloric end be dropped, as occurs when the liver becomes displaced downwards, the point at which the tear is likely to take place approaches the œsophageal attachment, and separates from the pyloric attachment in a degree proportionate to the downward displacement of the liver.

The result of defective drainage of the stomach is an alteration in the chemical character of its contents. This alteration has attracted the attention of the physician, who regards it as the primary factor in the development of an ulcer of the stomach rather than the effect of intestinal stasis as affecting the stomach.

Now look at the duodenum, through which the contents of the stomach are carried after they have escaped from that organ. Note that the first part alone is mobile and covered by peritoneum, while the remainder is fixed securely in position.

Continuing the direction of the end of the duodenum is the commencement of that portion of the drain-pipe to which the term "jejunum" has been given. You notice that the end of the duodenum is fixed in a peritoneal grip, which is so arranged as to present a sharp margin. This after a time becomes thickened by new bands that develop in the under surface of the great omentum in consequence of the strain thrown upon it by a loaded transverse colon. You see at once that if the individual is exhausted for any reason whatever the jejunum passes directly downwards from this band and kinks the drainage tube abruptly at this point. This is, perhaps, the most unsatisfactory point in the drainage scheme.

The block, which results from what we might call the duodeno-jejunal kink, produces in the duodenum a distension which is naturally experienced most in that portion of the duodenum which alone is capable of distension—namely, the first portion which is free and covered by peritoneum. The distension may not be sufficient to produce any change in this portion of the bowel appreciable to the eye or finger, or it may produce engorgement, abrasion, or ulceration of the mucous membrane of this segment of the drainage scheme.

In any case, when the obstruction exists it produces pain and tenderness in the duodenum, coming on when the food has passed from the stomach into it. This condition is relieved by assuming the supine posture, when the loop of jejunum drops back into the left loin and the kink is relieved. This obstruction may occasionally be overcome by taking food into the stomach, which would appear to set up such a forcible reflex contraction of the duodenum as is able to overcome the obstruction, and so relieve the tension in the duodenal segment. Practically all severe pain in any portion of the drainage apparatus is set up by obstruction in one form or another. Physicians seem to have grasped this vaguely, since they apply the term "colic" to many of these pains, indicating the recognition in their minds of mechanics common to them all.

Can I afford you more evidence of this kinking of the drain-pipe at the junction of the absolutely immobile termination of the duodenum with the completely mobile commencement of the jejunum?

You know that physicians treat duodenal ulcer as they do gastric ulcers—by rest in the supine position, differing among themselves as to the varying advantages resulting from mouth and rectal feeding. Apparently the mode of feeding makes very little difference to the treatment of the ulcer, while the rectal variety has the disadvantage of being very unpleasant, and at the same time unsatisfactory to the cravings of the patient.

The duodenal ulcer gets well very rapidly indeed in this position, since the cause of its production, namely, the kinking of the pipe, ceases to exist while the patient is in this posture. The gastric ulcer, on the other hand, gets well very slowly, since the strain upon it is only partially relieved.

The surgeon cures duodenal ulcer by performing what is called gastro-enterostomy. In other words, he secures the commencement of the jejunum to the stomach in such a manner that it can no longer fall vertically downwards and kink at its junction with the duodenum. In a certain proportion of cases where the stomach is very dilated he fails to secure the jejunum satisfactorily, and it may still kink. This is due to the fact that the part of this operation which has impressed itself on his mind as being the most important is the formation of a hole between the stomach and jejunum which is very effectual should the duodenal ulcer contract in healing sufficiently to occlude the lumen of the duodenum, but in the usual case of engorgement, abrasion, or ulceration of the duodenum, it affords the patient no advantage, while it occasionally exposes him to what is called a vicious circle if the operation is done by a surgeon who is not too competent at the job.

Still whether the jejunum is attached to the posterior wall of the stomach in a very variable direction, as is usual nowadays, or whether it is connected with the anterior wall, as it is in so-called anterior gastro-enterostomy, does not matter so long as the mobile segment of jejunum is so fixed that it cannot kink upon the fixed duodenum.

The next weak spot in the drainage system occurs at the end of the small intestine—the ileum. The caecum, which is the blind extremity of the cesspool, tends to become displaced into the true pelvis, which it occupies to the inconvenience of other important structures. This tendency to fall is met as before by the crystallization of lines of strain. These form bands external to the caecum and ascending colon, and fix these structures to the abdominal wall. The lowest secures the appendix, and frequently kinks it, with the result that the portion beyond the kink distends and produces symptoms of

varying severity which are comprised under the term "appendicitis."

The strain internal to the caecum comes upon the termination of the ileum and the posterior layer of its mesentery. In the latter region a layer of peritoneum is formed which kinks the ileum in two planes, one being vertical and angular, and the other being due to torsion, the new ligament gradually extending over the peritoneal aspect of the affected loop of intestine. These conditions have been illustrated in a previous paper published in the *Lancet*, and entitled "The Kink of the Ileum in Intestinal Stasis." By this means the end of the ileum and the additional thickening and contraction of the posterior layer of the mesentery form an internal ligament which tends to keep the caecum out of the pelvis, while the acquired external ligament of the caecum is represented by the planes of peritoneum which extend inwards from the abdominal wall on to this portion of the cesspool, and by the proximal part of the appendix should this structure become involved in these acquired adhesions, as it so often does.

Nothing appears so absurd as the attempts of surgeons to make out that the inflammation of the appendix is a primary condition, and that it is productive of several of the other effects of intestinal stasis. The fallacy of regarding one effect as the cause of another is so general in medicine that it is really hardly worth while calling attention to it in this particular sequence, except that in this condition one is appalled at the correspondence on the subject, which lingers and then breaks out at intervals in the medical press.

The next kinks to which I would call your attention are those that develop abruptly at the hepatic and splenic flexures of the colon. To meet the drag upon the transverse colon with the pull exerted by the loaded caecum and ascending colon lines of strain are crystallized as peritoneal bands, which drag these flexures upwards and convert the passage from a round turn into a sharp kink. This is exaggerated still further by the formation of bands which connect the adjacent surfaces of the transverse, ascending, and descending colon, and which serve to transmit some of the weight of the loaded transverse colon through the ascending and descending colon to the abdominal wall, so taking some strain off the convexity of the stomach. They also are crystallizations of lines of strain in peritoneum. These, like all the other bands I have described, are obviously evolutionary, and are not inflammatory in origin, and exist in the first instance for the advantage of the individual. Yet, like all variations from the normal which develop in the bodies of labourers to enable them to perform their functions more economically, they tend to shorten the life of the individual. This is illustrated more clearly in the evolutionary bands in the abdomen than in any other part of the body, the result being more disastrous to life here than elsewhere.

Both the splenic and hepatic flexures, ceasing to perform the functions of round turns and becoming angular in character, are exposed to much more irritation, and at these points the results of such irritation are liable to develop and to terminate as malignant disease.

The kink of the hepatic flexure occasionally becomes partly or completely occluded, and the conditions develop to which the terms acute and chronic volvulus of the caecum are applied.

A kink may develop at the level of the iliac crest on the right side, where a firm, strong band of adhesions may attach and control the lumen of the ascending colon sufficiently to cause some obstruction at this point.

Again, the acquired ligament that develops between the pylorus and the under surface of the liver and gall bladder frequently extends over the pylorus to the transverse colon, helping to secure it indirectly to the under surface of the liver. In a number of cases it gets a sufficiently firm grip of this portion of the transverse colon as to obstruct its lumen very definitely and to produce sufficient irritation in this situation as to make it a favourite locality for the development of cancerous or other infection.

The descending colon rarely becomes much damaged by the fixation it undergoes in transmitting a portion of the weight of the transverse colon through acquired adhesions to the abdominal wall external to it.

The bowel beyond it is, however, a source of great trouble in the erect posture, and the modifications it undergoes because of the efforts of Nature to effect a useful compromise are very various, and are associated frequently with more or less disastrous consequences.

The original function of the sigmoid loop is to exert strain on the bowel beyond it under the influence of the impacting left thigh, which forces its loop upwards and inwards in defaecation, and so facilitates the passage of hard faeces along a tube which by this means is rendered as straight as possible. It is quite obvious that while the extension of the rectum permits of the more ready passage through it of solid matter under the influence of an increased intra-abdominal pressure, an abnormal elongation of the rectum and a puddling of its loose loops in the floor of the true pelvis afford the most complete obstacle imaginable, short of the presence of a stricture, to the passage of solid matter through it under the influence of the same intra-abdominal pressure.

How to deal with the so-called sigmoid loop in the erect position affords a very difficult problem for the ingenuity of the organism. The presence of this loop loaded up with solid faeces in the true pelvis struggling with the caecum and transverse colon to occupy a portion of this space, to the great discomfort and disadvantage to the functioning of the viscera which reside there normally, has to be met in some way. As elsewhere, this is effected by the crystallization of lines of strain which are laid down as peritoneal bands or adhesions, which extend from the peritoneum external to the meso-sigmoid to the outer surface of the meso-sigmoid, shortening it up till, in a typical case, the mobile loop of bowel is replaced by a short straight tube, which crosses the iliac fossa obliquely, and has only a partial peritoneal covering. This is the best manner in which the disability of the loop can be met. Still it presents certain distinct disadvantages. The tube is narrower than normal, and, being fixed, it affords a greater obstacle to the passage of solid material through it. The resistance offered to the passage of material is evidenced by the formation of diverticula, and foci of infection by inflammatory and cancerous organisms in this anchored bowel. In a considerable proportion of cases the formation of the peritoneal bands fails to secure the mesentery of the sigmoid loop uniformly. They may only secure the ends of the loop which are approximated by their contraction when both limbs are partly obstructed, the distal much more than the proximal. This results in a gradual increase in the size of the loop owing to the progressive exaggeration of the distal kink, and any aggravation of the kink results in complete obstruction to the passage of faeces through it when the condition is described as one of volvulus.

Or the fixation of the loop may be in such a manner that it forms two loops, the distal ends of which are chronically partly, and occasionally completely, kinked. A somewhat frequent condition is that the upper portion of the sigmoid loop is pinned down to the fossa, while the remainder becomes free and joins the rectum, to form a very long loose pipe, which occupies the true pelvis. Since this mechanism affords a very marked obstacle to the passage of solid faeces through it, it acts in the same manner as a kink or other obstruction, with the result that there is a tendency to the progressive increase in the length of this part of the bowel, and to the accumulation of a large quantity of solid material in it, without the individual being aware of the fact in any way. There is also no reason either why there should not be a daily evacuation of a portion of the contents, which stagnate in the gradually elongating terminal segment of the gastro-intestinal drain-pipe.

It is a peculiar thing that this type of alteration is the one that exists apparently without exception in tuberculous patients. On the supposition that a patient cannot become tuberculous unless the resisting power to the entry of organisms into the tissues has been reduced by intestinal auto-intoxication, I have disconnected the large bowel in cases so advanced as not to yield to rest and tuberculin, with the greatest advantage to the patient, whose local and general conditions have improved in a marvellous manner. In some of these children the portion of mobile gut intervening between the upper fixed portion of the sigmoid loop and the portion of rectum which has no peritoneal covering was excessively long, in one case measuring at least 3 ft. This fact renders it possible for the surgeon to effect the entry of the divided ileum low

down into the mobile loop, quite close to its termination. The operation produces no shock whatever, and is followed by an obvious and increasing improvement in the child's general condition within two or three days after the operation.

CHRONIC INTESTINAL STASIS TREATED BY SHORT-CIRCUITING OR COLECTOMY.

A BRIEF STUDY OF THE LIFE-HISTORIES OF FIFTY CASES.

BY HAROLD CHAPPLE, F.R.C.S.

RECOGNIZING the importance of the ill effects on the individual produced by defective drainage of the bowel, and realizing the necessity of a radical treatment in many of these cases, in 1901 Mr. Arbuthnot Lane performed the first of a series of operations for a condition which he has fully described under the title of "Chronic Intestinal Stasis." Since then this work has progressed and developed and thrown a new light on the consideration of problems of such vast importance that it seemed to me that it would serve a very useful purpose if the accessible cases so treated were subjected to a careful analysis, and fancies replaced by facts. If it be true that a real condition has been observed and subjected to a satisfactory treatment, then progress has indeed been made; but if, on the other hand, the results of these operations have proved to be a series of monotonous failures—as, apparently, some would have us believe—then by all means let us follow their advice, and relegate such operations into oblivion.

I shall only describe such things as I have myself seen. I have endeavoured to take nothing for granted, but as I have been fortunate enough to see a large number of these cases beforehand and have assisted at many of the operations, I feel that I am in a position to put forward evidence derived from personal observation, and I have gone into the cases as fully as possible from all points of view.

The statement that colectomy has been recommended for constipation rivals in its completeness one made to the effect that amputation of a carcinomatous breast was advised for the removal of the lump. The constipation in itself cannot be a pathological entity, but is merely the outward and visible sign, patent even to the lay mind, of a defective intestinal drainage, which, it is submitted, is productive of very grave harm. None of the patients whose histories are recorded below would have permitted themselves to be subjected to operative treatment for the mere fact that his or her bowels were not opened regularly, nor would such a treatment have been suggested. It was the observation that this intestinal stagnation was accompanied by and resulted in such a grave condition that led to the adoption of radical surgical measures. In no case was any operative treatment suggested before all simpler remedies had been given a prolonged trial and failed. It will be well to keep this fact in mind when judging of the results.

I have divided the cases into two groups, the former of which, Group A, includes those whom I have been able to observe and question personally, and it is on their evidence that I have based most of what follows. The information contained in Group B was obtained by correspondence with the patient and the medical attendant, and reference to the Surgical Reports of Guy's Hospital. My list does not pretend to include all the cases that have been subjected to operative treatment. It includes fifty of those that were reasonably accessible to me, and the object of this paper is to submit the facts observed and to try and suggest what can be learnt from a detailed study of the life-histories of these patients.

A careful analysis of these histories shows a remarkably constant set of symptoms, and examination of the patients reveals a very constant set of signs, and it is submitted first that these are due to a condition of chronic delay in the passage of the intestinal contents, which delay is mainly in the colon; secondly, that this delay is due to the mechanical obstruction caused by evolutionary adhesions, and results in an absorption of an amount of toxic material greater than can be efficiently dealt with by the individual. Based on this hypothesis, and having found that the mere breaking down of such adhesions was futile owing to their rapid re-formation, the lower end of the ileum was divided and an end-to-side anastomosis made between this divided end and the upper part of the rectum. Should pain have been a sufficiently prominent feature the colon is removed to the site of anastomosis, at the same operation if the condition of the patient is sufficiently satisfactory, or if not, at a subsequent operation if necessary.

SYMPTOMS.

First of all let us observe what features these patients presented, and note their conditions both before and after their operations. A comparison drawn between these will place us in a position to be able to judge of the results obtained, and to see how far we are justified in assuming that the hypothesis on which this work is based is a correct one.

It will be seen that in the majority of the cases the constipation was not regarded as of any importance by the patient, but the *abdominal pain* was the symptom which brought them to seek advice, and it was for this pain that the operation was first performed. The degree of this pain varied considerably in the different patients, but in almost every case was sufficient to make the sufferer lead the life of a chronic invalid, and in a large number of the cases had brought about a condition of total inability to perform the duties of life. The site of the pain varied, too, and its position was usually indicated by a hand placed on either side of the abdomen, and in those patients whom I subsequently saw operated on this was a very fair guide to the main site of obstruction.

Associated with this abdominal pain was a set of signs and symptoms which are grouped under the title of those due to "autointoxication." These symptoms were found so constantly associated with a condition of intestinal stasis, and were so constantly and definitely removed by exclusion of the large bowel or its actual removal and the consequent relief of the stasis, that there can be little doubt as to their causation. The symptoms complained of by these patients were:

1. *Headaches*, which were severe and frequent.
2. *Attacks of nausea*, often followed by retching or actual vomiting. In some cases the vomiting was very frequent indeed and of a severe nature. It was very interesting to note that in several of the cases blood was frequently present in the vomit, and had led very able men to the diagnosis of gastric ulcer, although none such was found at the operation.
3. *Loss of appetite* was almost constantly present.
4. *Loss of weight* was present in all cases.
5. *Markedly cold hands and feet*, which gave an indication of a defective circulation.
6. *Mental apathy.* This was very definite in most cases. It was most marked in Case XXX, who was in a state that was well described by her medical attendant as one of torpor. Many felt that death would be a welcome relief from their physical and mental misery, and two had actually attempted to bring about that end.
7. *Constipation*, which in all was persistent and its previous treatment had failed. One case had gone on several occasions for twenty-eight days without an action of her bowels in spite of treatment.
8. A *constant foul taste in the mouth*, which was often accompanied by foul breath and carious teeth. The tongue was constantly furred.
9. *Attacks of abdominal distension*, which were accompanied by discomfort and relieved by eructation or the passage of flatus or an action of the bowels.
10. *General muscular pain* and a loss of freedom in the movements of the joints.

A physical examination showed:

Skin-staining, as a rule of a general sallow or brownish nature, associated with more definite localized patches under the eyes, in the axillae, groins, etc., or in any region where pressure was made by the clothes. This was often definitely appreciated by the patient and had become more noticeable recently. The degree of staining varied directly with the distance of the site of obstruction from the stomach.

The breasts showed changes, which in the early stages are similar to those usually described as chronic mastitis and later as cystic degeneration. The degree of these breast changes seems to bear a direct relation to the

degree of autointoxication and affords a definite index to the extent of the latter. That these degenerated breasts are exceedingly liable to malignant change has impressed itself most forcibly on my mind, and in the cases given below there is definite proof that this cystic degeneration slowly but surely disappears after an ileo-colostomy, and the breast becomes quite clear and supple again.

The abdomen.—Palpation was attended with tenderness over the abnormally fixed areas of the bowel. The main site of obstruction varied in the different patients, and consequently the position of maximum tenderness varied. The caecum, as a rule, was a pelvic organ and much dilated. In some cases it was found fixed in the right iliac fossa. The ilio-pelvic colon presented two main varieties, in one of which a straight, thickened tube was palpable in the left iliac fossa; in the other it was not so easily felt, but at the operation was found as a large distended loop, with its ends approximated and fixed by adhesions to the left iliac fossa.

The transverse colon was usually palpable and hung below the level of the umbilicus, and its middle portion was found to be in the true pelvis. The ileum was usually entirely in the pelvis.

The accompanying diagrams are presented as typical. The radiograms were taken at the intervals stated after a bismuth meal was given. They were taken by Dr. A. C. Jordan, Medical Radiographer to Guy's Hospital, who has made a very special study of Mr. Lane's cases, and has been able to obtain an excellent series of *x*-ray photographs of intestinal stasis affecting the several portions of the gastro-intestinal tract.

Diagrams showing Course of a Bismuth Meal taken at 4 p.m. on June 28th.

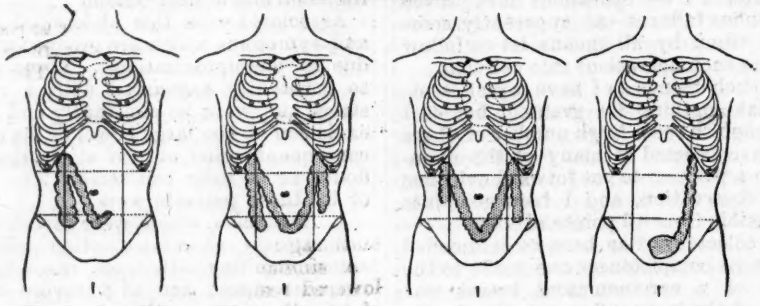


Fig. 1.—June 29th, 12 noon. After 20 hours.

Fig. 2.—June 30th, 12 noon. After 44 hours.

Fig. 3.—July 1st, 12 noon. After 68 hours.

Fig. 4.—July 2nd, 12 noon. After 92 hours.*

* A small motion was passed at 9 a.m. containing a trace of bismuth.

As regards the previous treatment, it had been long and varied; it had been largely medical, and carried out in the ablest hands and failed. Towards the abdominal pain surgical treatment had been directed in several cases, and such operations as appendicectomy, nephrorrhaphy, ventrifixation of the uterus, removal of the coccyx, had been performed.

Nature of Operation.

The operative procedure adopted by Mr. Arbuthnot Lane in these cases was briefly this:

Half an hour previous to the operation 4 pints of sterilized normal saline are introduced into the axillae. A hypodermic injection of $\frac{1}{4}$ grain of morphine and $\frac{1}{100}$ grain of atropine is given, and ether is administered by the open method.

The abdomen is opened by an incision through the left rectus, and the viscera are examined. The lowest point of obstruction is found, and the ileum is divided and its distal end invaginated by a purse-string suture, and then the proximal end of the ileum is implanted laterally into the lowest accessible portion of the ilio-pelvic colon. It may be mentioned that quite frequently the iliac colon is so tightly adherent and the wall of the intestine so thin that this end-to-side anastomosis is a difficult procedure. A full-sized oesophageal tube is introduced through the anus up through the anastomosis, and is fixed in position by a suture through the perineum, and is retained for four or five days.

Should the pain have been a sufficiently prominent feature, it is considered wise to remove the colon up to the seat of anastomosis by ligaturing the mesocolon in portions, and then dividing it beyond the ligatures.

One of the most remarkable features is the slight degree of shock that follows this operation. It is no rare thing to see the patient reading a newspaper within thirty-six hours of the operation, and expressing herself as feeling already much improved. One patient who was operated on under tropacocaine related her experience to me on her return to the ward with much enthusiasm.

As regards the pathology of this condition, it has been so carefully described as to need no further details. I fancy that no one who has carefully observed the operative findings in these cases can have any doubt that the cause of the delay of the passage of the intestinal contents has been placed on a firm anatomical basis. It is due in the majority of instances to the presence of adhesions which fasten the bowel to the posterior abdominal wall in such a way that the bowel is kinked upon itself at an acute angle, and often in addition is rotated on its longitudinal axis. Thus a very definite cause of partial obstruction is produced. One is impressed by the fact that these retaining bands are evolutionary and useful, and only produce obstruction when they are formed irregularly, and, having failed to secure the bowel uniformly, a kink or obstruction has resulted.

In the other smaller groups of cases the obstruction is due to static causes; for example, an ileal obstruction may be produced by the bending of the lower end of the ileum over the pelvic brim as it passes upwards to a caecum fixed in the right iliac fossa in a feeble subject.

The difficulty in realizing that the conditions described exist seems to arise from the fact that the picture presented on opening the abdomen naturally varies, as the site of the main adhesions and the consequent effects on the bowel are not constant, but vary in the different cases. These adhesions develop in the mesentery or mesocolon, but are quite distinct from it and can be dissected off and the mesentery left intact.

The question is sometimes raised as to the possibility of these adhesions and the resultant kink being able to obstruct the lumen of the bowel, so that an intestinal stasis may result. In this connexion let me refer to Case xxxii, who was given an enema previous to her operation, and its introduction was attended with very marked pain. It was retained, and when the abdomen was opened it was found that the enema was contained in a much-distended pelvic colon and rectum, but that none of it had succeeded in getting past the lower attachment of the loop of which the iliac colon consisted.

Condition Subsequent to Operation.

The first thing noticed by the patients is usually that they move their limbs more easily, and they tell you that they feel as if a cloud had been lifted from them. The headaches, the nausea, the vomiting, the depressed circulation, the mental lassitude and apathy, are gone. The foul taste goes from the mouth, and the skin staining clears up at a remarkable rate. The constipation is in many cases cured, and is in all now easily under control. A bismuth meal now reaches the rectum in eight hours. The sister of the ward tells me that she has not yet seen a case that has required more than a saline draught to secure a daily easy action whilst in the ward. There has not yet been, to my knowledge, a case of diarrhoea following the operation. Thus we see that the evidences and results of the intestinal autointoxication commence to disappear from the operation, and after periods varying in length up to eight years we find that the early improvement has been maintained, there has been a steady increase of weight, the cystic degeneration of the breast has slowly but surely disappeared, and in nearly all the cases the improvement has been such that the patients have been returned from a state of chronic invalidism and a condition of mental and physical wretchedness, to the enjoyment of their lives and work again. Of course this has been a more marked feature in the private

patient who has been able to enjoy a period of rest during convalescence.

I have purposely left the question of pain to the end. In a large number it is quite gone. In some of the cases it has had to be dealt with subsequently, and it will be instructive to consider it in more detail. Among those cases which I have seen there have been only two in which there has not been a very marked improvement. In those patients who experienced pain after the operation, as far as I could determine, it was due to one of three causes:

1. In the majority of them it was due to occasional attacks of flatulent distension, which were accompanied by pain of a colicky nature. It was relieved by the passage of flatus or an action of the bowels. These attacks can be controlled by the habitual use of pure liquid paraffin, and the wearing of a suitable abdominal support. An occasional small dose of ol. ric. was sufficient in most cases to disperse it.

2. Then there was another group in which the cause of pain was found in the distension of the blind ends of the lateral anastomosis, which was originally the method adopted. It has only been necessary to obliterate these ends to cause a complete disappearance of the pain. To meet this cause an end-to-side anastomosis is now adopted.

3. The most serious cause of pain was found in the formation of inflammatory adhesions between a loop of small intestine and the area in the right iliac fossa, which has been denuded of peritoneum by the removal of the caecum. The freeing of this adherent loop is followed by a relief of pain.

The two failures with which I am acquainted have been due to very general adhesions, which have re-formed in spite of persistent efforts to relieve them.

It need scarcely be added that this subsequent formation of adhesions is not peculiar to the particular operation under discussion.

It seems fairly well established, then, that the symptoms described under the head of autointoxication are without doubt cleared up by an ileo-colostomy, and as far as I was able to ascertain from these patients there was no other cause for any complaint than the pain referred to above. It was negligible in most of the cases; in a few of the cases it had subsequently to be dealt with, and in only two was there not a very marked improvement. It will in future be met by an end-to-side anastomosis, by the wearing of a suitable abdominal support, and the habitual use of paraffin.

I do not wish to convey the impression that all these patients have been restored to a condition of perfect health. In a large number this has been done. This list includes many of the earliest cases, and this brilliant piece of work has been carried out on material that might well be described as wreckage. Even a casual glance at the patients and their stories shows the nature of the conditions that had to be dealt with, and we must not forget that all other treatment had hopelessly failed. Speaking generally, I take it that the object of any surgical procedure is to render the individual more efficient, and to what extent success has been attained in these cases must be obvious to all. One has only to see these patients to realize how good the results really are.

On the question of the nature of the substances absorbed from the bowel much interesting light has been thrown by a series of papers by Metchnikoff entitled, "Etudes sur la flore intestinale," which appeared in the *Annales de l'Institut Pasteur* in 1910. His distinguished assistant, Dr. Distaso, has been over from Paris on various occasions for the express purpose of assisting in the investigation of this matter. There is probably no greater living authority on the anaërobic organisms, and I have been fortunate enough to have had several opportunities of discussing this subject with him.

From the papers referred to above I have taken the following statements:

1. That in the myriad population of the intestinal tract there are at least three anaërobic organisms which can produce very virulent poisons.

2. That these poisons are of the aromatic series, and are produced by certain of the intestinal organisms.

3. According to the data we have collected in this communication it is no longer a hypothesis but an established fact that certain micro-organisms of a normal intestinal flora produce poisons—phenols and indols—which are re-absorbed by the normal intestinal wall, and are capable of producing grave lesions in our vital organs—vessels, liver, kidneys, etc.

This throws quite a new light on the pathology of many of the conditions of the heart, liver, and kidneys, and the subject of intestinal autointoxication becomes one of the greatest possible interest.

As regards the mortality of this operation at the present time, Mr. Mullins and I collected the cases done at Guy's Hospital from June, 1909, to June, 1910; 16 operations were performed with 1 death, and that was due to the bursting of an abscess from the abdominal wall into the peritoneum seven days after the operation.

It is quite clear, then, that the colon is by no means an essential part of the human anatomy. These patients put on weight very definitely and maintain it, and whatever part this viscus may play in the absorptive process appears to be easily compensated for by the lower end of the ileum.

The fear that this operation would be followed by a fatal diarrhoea has proved groundless. This is also the case with the supposition that these patients would suffer from thirst. In no case that I have seen has the patient after operation evinced any abnormal desire for fluids. I mention this as I have seen it stated to the contrary.

The deductions that can be drawn from this work are of the greatest possible interest. The first question that arises naturally is: What is the effect of this continual absorption on the resistance of the individual to bacterial infection? Interest at first centred on those patients with advanced tuberculous affections. A careful observation shows that a large number of them show all the physical signs which we have learnt are due to intestinal auto-intoxication, and it seemed fair to regard this depreciating influence as a very large factor in their lowered resisting power to the tubercle bacillus. The present-day treatment of tuberculous disease does not appear to me to be so perfect that this suggestion is not worthy of the most thoughtful consideration, and in this connexion let me draw attention to Case XLVIII and the great success which attended the operation. Already Mr. Arbuthnot Lane has dealt with several cases of hopeless tuberculous hip in this way, and the results have up to date been most encouraging.

A similar deduction may be drawn as regards the lowered resistance in an intestinal stasis to the entrance of any other pathogenic organism, and if the future will but produce verification of the statements made by such an eminent authority as to the effect of the continual absorption of intestinal products in the causation of arterio-sclerosis and the various affections of the heart, liver, and kidneys, it seems reasonable to suppose that until we learn to control this absorption by other means the operation of ileo-colostomy will become one of the commonest of the surgery of the day.

GROUP A.—*Evidence Obtained from Personal Observation.*

CASE I.—A female, aged 27, single, a hospital nurse, had suffered for many years from marked constipation, which was associated with marked and frequent abdominal pain, frequent severe headaches, attacks of vomiting, and a constant feeling of nausea, and a foul taste in her mouth. She could maintain no interest in anything. Her appetite was very poor, and her weight had gone steadily down to 119 lb.

On Admission.—Her abdomen was distended; palpation of the colon was tender. Her lips were anaemic; her skin waxy, with much staining. Cystic changes were especially marked in the left breast.

Her condition had progressed, in spite of the ablest medical treatment, and in the end she was an invalid and quite unable to perform her duties as a nurse, because of a marked feeling of lassitude and the abdominal pain and vomiting.

In June, 1904, right nephrorrhaphy was performed, but only temporary relief obtained.

In October, 1904, an ileo-sigmoidostomy was performed.

I saw her on February 16th, 1911, and she was a full-faced woman, with a perfectly clear, pink skin. Her weight is now 147 lb. The bowels act easily, requiring merely an occasional purge. The headaches, vomiting, nausea, and feeling of lassitude are gone. She has a good appetite. The cystic changes in the breast have quite gone.

She returned to the full duties of a nurse in July, 1905, and since then has followed the usual hospital routine, and says she feels perfectly well in every way.

CASE II.—A female, aged 28, single. Had suffered from constipation for many years; this had become worse during the last three years, and had been absolutely dependent on purgatives and enemata during that time. An action of the bowels was always attended with pain, and an enema caused almost

unbearable pain. This condition was associated with attacks of left-sided abdominal pain, frequent attacks of dizziness, distressing cold hands and feet, frequent headaches, loss of appetite, frequent attacks of nausea, but vomiting only on two occasions. The attacks of abdominal pain and marked lassitude and mental inability had rendered her quite unable to do any work for three and a half years.

For two years previous to admission she had been under the care of one of the ablest London physicians, and been treated medically, but she had, nevertheless, become steadily worse.

On Admission.—Her skin was definitely stained; she was a thin, wasted, sallow-faced woman, and was suffering from an attack of acute abdominal pain, with a distended abdomen. The colon was palpable and tender. An enema given confirmed her story as to the pain produced. The cystic degeneration of the breasts was most marked. Her weight was 92 lb.

In August, 1909, colectomy was performed and a lateral anastomosis made. The convalescence was interrupted by the development of the *Bacillus coli* in the abdominal wound and urine. These were successfully treated by vaccines.

I saw her again on January 24th, 1911, and the difference in her condition was very real. Instead of the sallow, thin, miserable woman, one met a full-faced woman with clear skin. Her weight had gone up to 115 lb. Her abdominal pain had gone; her bowels acted regularly with paraffin. The headaches, dizziness, cystic breasts have gone. She is now quite able to do her work, takes a renewed interest in life, and cannot adequately express her gratitude.

CASE III.—A married woman, aged 42, with four children, was admitted because she had suffered from attacks of acute abdominal pain of irregular incidence and not apparently connected with the taking of food. During the last four years these attacks had increased in frequency, and were described as "simply dreadful."

She had frequent bad headaches, loss of appetite, many years' history of constipation, which alternated at times with diarrhœa, a constant feeling of lassitude, and she felt she was "dragging along anyhow." She had been treated medically for years.

Her skin was stained; her cold hands and feet were a source of much discomfort. The sigmoid was palpable as a fixed, straight tube which was tender. The cæcum was in the pelvis, kidneys were palpable, and there was a general enteroptosis. She was in a very low condition indeed.

On opening the abdomen in July, 1909, the ascending colon, cæcum, and the lower end of the small intestine were found tied down in dense adhesions, due to a tuberculous peritonitis.

The colon was removed as far as the ileo-pelvic colon, together with the lower 2 feet of the ileum, and a lateral anastomosis was made. She was in such a low condition that during the convalescence she developed a bedsore, which was resistant to treatment, but was eventually healed.

I saw her again on January 24th, 1911, and she looked quite a different woman, with a clear, healthy skin. She had put on over 28 lb. Her appetite she describes as tremendous, her headaches have gone, the bowels act easily with an occasional purgative. She is quite able to do all her household duties. She says she feels "miles better," and is delighted with herself.

CASE IV.—A female aged 29, single, was admitted for many years' severe constipation which had defied all varieties of treatment, and she was quite dependent on increasing doses of purgatives, which produced an occasional action. This was accompanied by abdominal pain, which was aggravated by taking food, and was at first felt in the right side of the abdomen. It was associated with distension when she stood up. The pain had become very bad, but not unbearable. She had had frequent distressing headaches, frequent vomiting, a chronically furred tongue, and a constant foul taste in her mouth. For twelve months previously she had passed mucus per rectum. She was tired out by midday, and had been compelled to give up her work for eight months. A meal containing meat or fruit was followed by nausea and a definite epigastric pain in fifteen minutes. Skin staining was marked. Both breasts showed chronic mastitis. She had lost a lot of weight.

On November 25th, 1909, an ileo-colostomy was performed.

I saw her again on January 19th, 1911, and she was most definitely improved. She looked fatter, and now weighed 132 lb. Her skin staining was gone. Her bowels act easily with an occasional purge. The cystic changes in the breasts have disappeared. Her only complaint is that of an occasional attack of flatulence and distension. She has passed no mucus for five months. She has been back at work for five months, and says she feels very much better in every way.

CASE V.—A female, aged 27, married, was sent up for persistent and long-continued hæmatemesis of six months' duration.

She gave a seven years' history of constipation, which was such that, despite purgatives and enemata, which caused great pain, she had on occasions had no action for twenty-eight days. She had had marked abdominal pain, was rapidly losing weight. She had taken no solid food for two years, and had been treated medically as an in-patient in two London hospitals for gastric ulcer. She had been unable to work for about six years, and said she felt as if she just wanted to lie down and never get up again. On admission, her skin was almost the colour of an Indian's, the staining being most marked. She was sick after every meal. In August, 1908, she weighed 119 lb. She weighed 86 lb. on admission. She was weak and depressed.

In August, 1909, colectomy was performed. There was no gastric ulcer present.

She was discharged with her bowels acting easily, able to take solid food, the vomiting ceased, and the skin staining having rapidly disappeared.

Until July, 1909, she got on splendidly. She married in May, 1909, and her husband thought she had done marvellously. Her weight had gone up to 117 lb.

In August, 1910, she had a bad miscarriage, and this has thrown her back somewhat, as she has since then had some abdominal pain. Apart from this, she says she would still be quite well, and she certainly looked very well.

I saw her in March, 1911, and she was almost free from pain again, and was quite pleased with her condition.

CASE VI.—A female nurse, aged 43, single, in April, 1892, had acute appendicitis. Until 1900 from that date she had had repeated attacks of severe abdominal pain with sickness and constipation.

In November, 1900, the appendix was removed, but the attacks of pain and sickness soon recurred and constipation was still obstinate. This state continued till 1905, and she then began to pass mucus. In June, 1905, the right kidney was fixed, but the symptoms were only temporarily relieved.

She steadily lost weight, and it fell to 89½ lb. At the end of September, 1906, she became very ill and was forced to keep to her bed, and wasting and loss of strength became pronounced. The constipation was uncontrollable with any purgatives, and she had as many as four enemata a day. Despite these, she had gone sixteen days without any action. Her skin became very dirty, and her mental and physical wretchedness was marked.

In May, 1907, she had been in bed for eight months, and during that time would lie for two or three days at a time in a sort of semiconscious state, and was so ill that it was feared removal to hospital was impossible. She was admitted in May, 1907, and colectomy was performed.

She was readmitted in January, 1908, and an adherent loop of bowel freed. I saw her on January 31st, 1911, and she said that she had greatly improved in every way. Her weight was now 105 lb. The vomiting had ceased; the bowels acted easily with an occasional aperient. Her appetite had returned, and she was now able to do her work as a nurse.

CASE VII.—A married woman, aged 55, had been constipated for years. It had progressed in spite of all treatment, and often she had gone a fortnight without an action. Purgatives were followed by vomiting, and enemata were very painful. Before admission there had been no action for four weeks, and she was constantly vomiting a very foul material.

She had had severe headaches, abdominal pain for years. Her skin was almost mahogany in colour, and this was associated with defective circulation and a constant foul taste in the mouth. Her weight fell to 84 lb.

On admission she was considered too feeble for any surgical treatment, but she begged for something to be done, and on June 24th, 1907, an ileo-colostomy was performed.

I saw her on January 30th, 1911, and was struck with the clear, peach-coloured skin. Her bowels acted regularly. There was absolutely no pain, no headaches, no vomiting; her appetite is splendid, and she weighs 112 lb.

She feels better than she has done for many years, and does all her housework and works in her husband's parish just as any other normal person might do.

CASE VIII.—A female, aged 24, single, had suffered for years from extreme constipation with severe abdominal pains. She vomited very frequently, and was never without a headache. Twelve months' medical treatment had quite failed to improve her in any way. Her weight fell to 84 lb., and she was going downhill fast. She had done no work for two years, and had been a complete invalid.

In September, 1906, an ileo-colostomy was performed.

In February, 1907, the colon was removed to the splenic flexure.

She improved in every way, and put on 24 lb., but her pain returned in July, 1907, and a loop of adherent intestine was freed. This gave complete relief, and she improved greatly in every way.

In February, 1909, another coil became adherent, and this was freed. During her convalescence the intestine opened on to the abdominal wound, and a faecal fistula formed.

In February, 1911, she looks clear skinned and well. She has put on a great deal of flesh, and feels splendid in herself. The fistula has not yet closed, and it has not been possible to devise any apparatus to control it, so that she is thus still a cripple in that respect.

CASE IX.—A married woman, aged 44, with four children, had been constipated for many years, which had progressed in spite of all treatment. She had frequent headaches, which latterly became almost constant. Her skin had become sallow, and she had frequent attacks of abdominal pain, distension, and vomiting. Her appetite went, and she had a constant foul taste. For nine months previous to operation the abdominal pain was almost continuous, and she was worn out by it and the frequent vomiting, and she was dying. She had had every conceivable form of medical treatment in the ablest hands.

In December, 1905, colectomy was performed.

I saw her in February, 1911, and she felt "wonderfully well," the headaches, vomiting and pain having quite gone. Her skin is clear and she is well nourished, and has put on 14 lb. since operation.

CASE X.—A single woman, aged 32, had suffered since childhood from constipation which had progressed in spite of treatment of every kind. The introduction of enemata was very painful. She had been compelled to lead the life of an invalid because of the frequent attacks of abdominal pain, severe

headache, abdominal distension, and vomiting. She wasted markedly, and felt "just dreadful," and was quite disinclined to go on as she was.

In 1900 appendicectomy was followed by temporary relief for a few months.

In 1902 for acute pain in the right iliac fossa and frequent vomiting.

In 1903 readmitted with extreme constipation, and an extensive operation was performed to free the colon from adhesions. Again only temporary relief.

In 1904 right nephrorrhaphy was performed, and in 1905 colectomy to the splenic flexure was performed.

In May, 1907, she was vastly improved, and had earned her living without a rest for twenty months. In November, 1907, an adherent loop had to be freed.

I saw her in February, 1911, and she was now very well indeed. She had put on 32 lb. since 1905, her condition being perfect in every way. About a year ago she began to get occasional attacks of discomfort two hours after a meal, and this is the only cause of complaint; otherwise she looks and is splendid.

CASE XI.—A single woman, aged 40, gave a history of constipation since childhood. This had progressed and been accompanied by severe abdominal pain, which had got worse since 1901, and in the last two years became unbearable, and she felt life impossible. She had frequent severe headaches, which eventually recurred every three or four days. She had lost a good deal of flesh, her appetite was gone, and she was thoroughly miserable. In attempts to deal with the pain ventral fixation of the uterus, removal of the coccyx, right and left nephrorrhaphy had been performed. In March, 1909, she first noticed she was passing mucus.

She was very sallow and pigmented on admission, and her pain referred chiefly to the right iliac fossa. The sigmoid region was very tender on palpation. Cystic changes were marked in both breasts, and on the left side had suggested a diagnosis of malignancy. Sigmoidoscope showed only flakes of mucus. In November, 1909, the colon was removed to the sigmoid flexure.

I saw her again on January 26th, 1911, and the difference was most striking, as she was now absolutely well and had put on flesh. Her doctor quite agrees with me in this view, and writes that "Mr. Lane may well feel pleased with the result of his operation."

CASE XII.—A single woman, aged 47, a nurse, had suffered for many years from chronic constipation, marked abdominal pain, frequent bad headaches, and vomiting. Many operations by various surgeons for the relief of this pain had been performed, but had failed. All hope of relieving her had been abandoned and she was admitted to a home for the dying. For about four months previous to admission she had been vomiting faecal material; her pain was such that she had been having hypodermic morphine daily. Her weight was down to 105 lb., and she was dying.

In July, 1904, an ileo-colostomy was performed, and in November, 1904, the colon was removed. In February, 1905, a very mobile right kidney was stitched up. In December, 1908, a diverticulum from the lateral anastomosis was laced up.

I saw her on February 3rd, 1911, and she is now a big, plump woman of 156 lb. Her bowels act easily with paraffin. She is very pleased with herself. A friend of hers writes: "I have known her for many years, and never saw her looking so well. She certainly is a living wonder."

CASE XIII.—A single woman, aged 29, gave a history of progressive constipation since 16, associated with severe abdominal pain, distension. To deal with this pain her appendix and right ovary were removed when 22. The relief was only temporary, and she gradually got worse. Constant "dyspepsia," abdominal pain, headaches, and a feeling of lassitude, which progressed to utter misery, had brought her for advice to many eminent men. Having the means, she had been in various nursing homes, and been treated in all the recognized methods, and at the end took 2 oz. of ol. ric. every evening and enemas *ad nauseam*, with the result that an occasional painful action followed. Her skin became absolutely yellow, and although she felt "dreadfully ill and miserable," she was diagnosed as "nerves." In spite of treatment her weight fell to 112 lb.

On September, 1905, colectomy was performed, and in five months she felt quite well, and her weight went up to 128 lb.

In December, 1906, it became necessary to free adhesions around the pylorus, but the relief was temporary, and in March, 1907, a posterior gastro-enterostomy was performed. In October, 1907, an adherent loop had to be freed.

Since then everything has gone well. I saw her in February, 1911, and she was in excellent health in every way. Her weight is now 140½ lb. She won a tennis tournament last summer, playing forty-four games in one match. She rinks; walked nine miles one day last summer. She feels "miles better," and is just delighted with herself.

CASE XIV.—A medical man, aged 43, had suffered from constipation since a youth, and for ten years it had defied all treatment. With this had come on a progressive feeling of lassitude, mental disability, loss of appetite, constant headaches, and sleeplessness. He had a chronically furred tongue. He had no pain. He had been treated for two years by West-End specialists, but had got progressively worse. Thinking he might be hypochondriacal, as had been suggested, he fought on until life became unbearable. Weight 116 lb.

In July, 1907, a lateral anastomosis was performed.

I saw him in March, 1911. His bowels act easily, no pain, appetite returned, weight 132 lb. He has since worked very hard in his practice, and has been absolutely well in every way for the last three years.

CASE XV.—A female, single, aged 27, had for many years suffered from marked abdominal pain, constipation, frequent vomiting, and severe headaches. For nineteen months previously she had been under the ablest medical treatment, but had got progressively worse. This was the worst case of pain in the series, and this, combined with frequent vomiting and a constant feeling of weariness, had made life unendurable. For two years she had done nothing, but had spent most of the time in bed.

After removing the appendix and two operations to relieve the adhesions by simply breaking them down had failed, in October, 1903, colectomy was performed. Since then the abdomen has been opened on several occasions to break down extensive inflammatory adhesions that form, but the relief afforded is only temporary, and this condition cannot be met.

CASE XVI.—A man, aged 44, with many years' history of uncontrollable constipation, which during the last three years had been accompanied by attacks of abdominal pain, which latterly had become very frequent and severe. Vomiting had been a feature for six years, and during the last twelve months he had vomited nearly every day, and often several times a day. No haematemesis. His appetite was gone; his weight fell to 118 lb., and he felt thoroughly miserable.

In December, 1904, an ileo-colostomy was performed.

In November, 1906, colectomy was necessary, and at this operation adhesions around the pylorus were divided and the stomach found dilated.

In April, 1907, a gastro-enterostomy was performed.

I saw him in February, 1911, and he was a strong well-nourished man weighing 161 lb., and absolutely well in every way and was delighted with himself. His ability to deal with a dinner at Simpson's left no doubt in my mind that the pleasures of his life were not curtailed in any way.

CASE XVII.—A single woman, aged 38, gave a five years' history of constipation, which had defied all treatment. In addition she had almost constant headaches, was always tired, constant foul taste, and carious teeth. Latterly had vomited after nearly every meal and abdominal pain had become very marked. Mentally she seemed dull and confused. She had a large cystic goitre, which raised the question of the advisability of giving a general anaesthetic.

In July, 1910, an ileo-colostomy was performed.

The bowels now act easily and regularly, headaches are gone, and she is mentally quite bright. The cystic thyroid is less by more than a half, and the patient says she feels better than she can ever remember doing.

CASE XVIII.—A single woman, aged 22, who had been constipated since childhood; it had become much worse since 14, and it was accompanied by frequent abdominal pain, which was worst when the bowels acted. These attacks became so frequent as to render life unbearable. With them were associated frequent bilious attacks and severe headaches, with loss of appetite. Her skin was stained and her breasts cystic.

In 1908 the ilio-pelvic colon was freed from adhesions, but only temporary improvement resulted.

In August, 1909, an ileo-colostomy was performed, and in February, 1910, colectomy was performed. She improved in every way, put on weight, bowels acted easily, and she felt "splendid."

In February, 1911, it was necessary to free an adherent loop.

The girl is now quite a different person; no headaches, no nausea, no pain, cystic changes in the breast have gone, and she feels perfectly well in every way.

CASE XIX.—A man, aged 22, who had suffered from intractable constipation, abdominal pain, nausea, frequent vomiting, bad headaches, all of which had progressed in spite of treatment.

In December, 1905, the appendix was removed, and the right-sided pain disappeared, but he was still much the same, and left-sided pain became very marked. His weight fell to 122 lb. He had a constant offensive smell which did not disappear after hot baths and change of linen; this with the abdominal pain and headaches made him come up for radical treatment, and quite prevented him working at all.

In November, 1906, the colon was removed to the splenic flexure.

I saw him on February 13th, 1911, and he was now a perfectly clean, healthy, well-nourished man weighing 150 lb. There is no pain, bowels regular without any medicine. The offensive odour and pigmentation have gone. He plays football, runs, cycles, and works as hard and as normally as any other man.

CASE XX.—A single woman, aged 26, had been constipated since 14, with frequent pain in the left iliac region, severe frequent headaches, described as "fearful." Had been medically treated since 1905; had done no work for months; weight down to 100 lb. Cystic changes in both breasts marked. Skin dirty. Bismuth meal markedly delayed in the colon.

In August, 1907, ileo-colostomy performed.

I saw her on February 6th, and she looked very well, and says "it was so lovely to feel well." No headaches; bowels act easily, no pain. Cystic breasts have cleared up. Her only trouble, she says, are occasional attacks of flatulence and distension. These she describes as trivial, and says she feels "wonderfully better."

CASE XXI.—A single woman, aged 32. A long history of obstinate constipation, and during the last few years had passed a lot of mucus. Had severe attacks of abdominal pain for last five years. In treatment of this pain the appendix had been removed and gall bladder explored later for stones, which were not found. The caecum had been opened and colon irrigated to get rid of the mucus, but had failed. She had almost

constant headaches, and attacks of retching, and was very hopeless about it all. She had markedly wasted.

In February, 1909, colectomy was performed, and was very difficult. She had a long, tedious convalescence as a faecal fistula opened on to the abdominal wall.

I saw her again on February 14th, 1911, and she said she felt "awfully well," and she certainly looked a very different person. Mucus gone, and she can walk several miles a day. Her one trouble is her fistula, and that will be closed by operation.

CASE XXII.—A single woman, aged 37, had suffered for years from marked constipation, headaches, abdominal pain, frequent vomiting, loss of flesh and lifelessness. She had a defective circulation, and was markedly stained. She had been compelled to give up her occupation because of the constant headache, vomiting, and pain.

In August, 1908, an ileo-colostomy was performed.

I saw her on February 6th, 1911, and she says she is very greatly improved in every way. Headaches gone, pain is now negligible, bowels act easily with occasional aperient; her weight has gone up and she has returned to work.

CASE XXIII.—A single girl, aged 19; had a history of many years' constipation, which had become much worse in the last year. Abdominal pain of six years' duration especially associated with defaecation. Frequent distressing headaches, frequent attacks of nausea, only occasional vomiting. Very dirty complexion; lost much flesh. The abdominal pain with nausea and complete lassitude made her feel "she did not care much what happened," and she had done no work for six months. Cystic changes marked in both breasts. Sigmoid palpable as fixed, tender, straight tube.

January, 1910, colectomy. From that time onwards she progressed. No pain, bowels act regularly, great increase in weight. Skin cleared up. Cystic changes in breast are quite gone. She has returned to work and interest in life again.

CASE XXIV.—A single woman, aged 27, with a history of constipation since childhood, said she had been treated at various hospitals for constipation and abdominal pain. Since 1903 she had been compelled to leave various situations. The pain and constipation progressed in spite of treatment, and became associated with acute headaches and faintness, and a constant feeling of lassitude and nausea.

In 1905 she did only five weeks' work.

In 1906 she began to pass mucus, and from then onwards was in hospital for seventeen months. An appendicostomy was performed, and the bowel washed out regularly for six weeks. This did not relieve the condition. Her constipation increased, and she took 7 minims of croton oil twice a week for some months; its chief effect at first was to produce acute pain and vomiting. On admission she was coarsely pigmented, had lost flesh, and cystic changes in her breast were marked.

In July, 1910, an ileo-colostomy was performed.

I saw her in February, 1911, and she says she is "infinitely better." Her skin is much clearer; her bowels act regularly without any aperient. She has put on weight; her appetite is much improved; headaches gone; no pain, but occasional flatulence. The difference in her mental condition is remarkable.

CASE XXV.—A single girl, aged 18, gave a history of severe constipation for four years. Marked frequent abdominal pain; three years' history of acute pain on defaecation. Loss of weight; appetite gone; almost constant headaches; sallow-stained skin; a state of advanced mental lethargy. Bismuth meal was markedly delayed in its course through the colon. Ileo-colostomy in July, 1908.

I saw her on February 7th, 1911, and she was markedly improved. Headaches gone; bowels act easily; gain of weight. Appetite—"eats wonderful now." Yellow colour gone. Went straight back to service, and her only trouble is an occasional attack of flatulence and distension.

CASE XXVI.—A single woman, aged 45, gave a long history of obstinate constipation, abdominal pain, pain on defaecation, very severe headaches, frequent nausea and vomiting, no haematemesis. Loss of weight down to 96 lb. Marked skin staining, and described her condition as one of general misery. Left breast showed marked cystic changes, which the patient thought was a "cancer."

In 1902 right nephrorrhaphy; in 1904 left nephrorrhaphy gave only temporary relief.

In 1904 ileo-colostomy, and in 1905 colectomy to the splenic flexure.

I saw her in February, 1911, and she looked well nourished, clear skin. She said that until Christmas, 1910, she was most markedly improved in every way. No pain. Bowels acted with occasional aperient. No headaches, nausea, vomiting. Put on weight, to 112 lb., and she was delighted with her condition. At that time she discarded her abdominal corset, and since then distension has returned. Cystic changes in left breast have quite gone. She will be given another abdominal support. She is now able to do all her home duties, and thoroughly enjoys her life.

CASE XXVII.—A single woman, aged 27, with a history of intractable constipation since childhood. In addition she had frequent abdominal pain, vomiting two hours after food. On seven occasions haematemesis. Severe frontal headaches, latterly almost constant. Had been compelled to give up situations for these reasons for the last two years. Weight fell to 100 lb. General muscular pain; almost chronic cough, with no sputum. Skin yellowish, constant foul taste. "She cares nothing if she lives or dies." Marked cystic changes in her breasts.

In 1902 appendicectomy with temporary improvement.

In December, 1902, pain returned and delay found at hepatic flexure, and so abdomen opened and adhesions broken down; again only temporary relief.

In January, 1911, ileo-colostomy.

March, 1911. She is now as happy as possible, and feels as if a cloud had been removed. Skin already much clearer. Bowels acting regularly. Improvement is remarkable.

CASE XXVIII.—A married woman, aged 38, gave a life-history of progressive constipation, which had defied medical treatment. Accompanying were very severe headaches, right-sided abdominal pain for six years, with frequent vomiting after meals. No haematemesis; constant foul taste; defective circulation. She had been unable to do her housework for six years because of pain and vomiting, and had been under treatment constantly.

Two months previous to admission had attacks of sickly pain under right costal margin, with attacks of vomiting, and was sent in as a case of gall stones.

On February 20th, 1911, an ileo-colostomy was performed; there were no gall stones. Since her operation she has most markedly improved; not a single headache; bowels act regularly; no vomiting, and she is delighted with herself.

CASE XXIX.—A married woman, aged 43, had been entirely dependent on purgatives and enemata for many years. Eventually these were only occasionally efficient, and were painful. Daily nausea, no actual vomiting. Frequent bad headaches; abdominal distension and much pain; defective circulation; constant foul taste in mouth; loss of appetite; stained skin; cystic breasts; constant feeling of weariness and depression. Was often laid up for six weeks at a time, and was quite unable to work.

In July, 1907, colectomy and pylorus liberated from adhesions. I saw her in February, 1911. Bowels now act regularly, headaches much improved; clean skin. Gain in weight, and she feels "so very much better." Cystic breasts cleared up. Absolutely enjoys life in every way, only complaint occasional flatulence and distension.

CASE XXX.—A single girl, aged 18, gave a long history of constipation, which had become much worse during the last nine months. Had been twenty-eight days without an action in spite of treatment. Had taken as much as a pint of ol. ric. in week without effect. Frequent headaches, much abdominal pain, defective circulation. Constant feeling of weariness and lethargy. Had been treated in every possible way at home and at hospital, and was sent up as a *dernier ressort*. A bismuth meal took four days to reach the rectum, and was then removed by an enema.

March, 1910. Colectomy.

On February 18th, 1911, her doctor writes: "The change in the patient is extraordinary. She has a clear fresh colour, she is bright and active mentally and physically, and her mental torpor and hysteria have almost entirely gone. Her bowels act easily. I saw her walking in one of the lanes the other day, and you would not know her for the heavy, uninteresting creature of eighteen months ago. I am delighted and surprised with the result." The patient herself is no less enthusiastic.

CASE XXXI.—A single woman, aged 53, was admitted in August, 1908, for left-sided abdominal pain, with constipation since girlhood and "indigestion," frequent attacks of abdominal distension with regurgitation into the mouth of a sour material, and in the bad attacks she vomited. Frequent bad headaches and marked periods of mental depression. Skin staining. Loss of flesh was marked. Mucus passed per rectum since 1904. When 40 a fibroid had become prominent, and in 1895 both ovaries were removed. She had done no work of any sort for six months previous to admission.

In August, 1908, an ileo-colostomy was performed.

I saw her in February, 1911. Her bowels act regularly. Good appetite. Headaches gone. No sickness. No colitis for months. Her only trouble consists in occasional attacks of flatulence, which cause abdominal discomfort. She is now able to do all her household duties.

CASE XXXII.—A single woman, aged 51, was admitted for very severe left-sided abdominal pain and constipation, which had become much worse in the last three years. Breasts markedly cystic. Deep pigmentation. Very tender in left iliac fossa. An enema was unable to pass the adherent loop in this fossa.

Ileo-colostomy in December, 1909. She writes to say she is very much improved in general health but still has some abdominal pain.

CASE XXXIII.—A single woman, aged 34, who had always been constipated, and suffered for years from attacks of marked abdominal pain and vomiting. She was a miserable-looking woman, and had done no regular work because of the pain and the constant vomiting for eleven years.

Appendicectomy in 1902 produced only temporary relief, and the constipation and vomiting persisted.

In November, 1903, an extensive operation was performed to break down adhesions binding down the large bowel, and again the relief was only temporary.

In July, 1904, ileo-colostomy was performed; and in November, 1905, the colon was removed to the splenic flexure.

Her doctor now writes to say that "Since then she has gradually and definitely improved. She has put on flesh, the bowels act regularly with a slight aperient, and the vomiting has ceased. Altogether she is very markedly improved."

I saw her on March 6th, 1911, and she said she kept very well indeed. She was well nourished, having gained 28 lb.; her bowels acted easily, the vomiting had quite stopped, and she

felt delighted with her condition. Her only trouble was occasional flatulence. Her abdomen was perfectly supple and there was no tenderness.

GROUP B.—*Evidence Obtained from the Guy's Hospital Surgical Reports, and by Correspondence.*

CASE XXXIV.—A male, aged 23, was admitted with a six years' history of obstinate constipation, for which he had been treated by various eminent German physicians; he had been to Carlsbad, and been treated with daily enemata, and in spite of these obtained an action every twenty-one to twenty-three days. Then he went to Berlin, and was treated with medicines, exercises, enemata, baths, diets, etc., but no relief was obtained.

In addition he had suffered from severe abdominal pain, worse after food; almost constant headache, steady loss of weight, poor appetite, and was quite unable to carry on his business.

In July, 1910, an ileo-colostomy was performed, and he has steadily improved. His bowels act regularly, and he is delighted with his condition.

CASE XXXV.—A married woman, aged 35, had complained of right-sided abdominal pain for the last fifteen years, with frequent attacks of nausea and offensive vomiting. Constipated since childhood, and quite dependent on purgatives, enemata, etc. Lost a lot of flesh. This in spite of all treatment.

Appendicectomy in 1908 gave only temporary relief from the pain.

In February, 1910, an ileo-colostomy was performed. She was discharged very much better in every way; the pain had gone, bowels acted regularly.

In March, 1911, she is maintaining the improvement, and her only trouble is attacks of flatulence, abdominal distension, and discomfort.

CASE XXXVI.—A married woman, aged 45, gave a history of severe constipation for many years, and this had defied treatment for the last six years. During the last twelve months headaches were constant, and with severe abdominal pain, which increased after taking food, had made her quite unable to do the lightest of her household duties. She was markedly pigmented, constant cold hands and feet. Had lost much weight, and was very thin.

In July, 1910, an ileo-colostomy was performed, and she was discharged very markedly improved, no pain, no headaches, bowels acting easily. She writes to say that this improvement is maintained.

CASE XXXVII.—A married woman, aged 39, who said that she had been constipated since girlhood, and this had of recent years become much worse. Defaecation had lately become very painful, and blood and mucus were found in the motions. Poor appetite. Suffered constantly from "dyspepsia."

She awoke with a headache, and was quite done up by teatime, and had to go and lie down every day. Frequent nausea, no actual vomiting; deeply stained; rapid loss of flesh. After many years' unsuccessful treatment, in February, 1906, colectomy was performed. Since then her bowels have acted regularly and comfortably. She has felt quite well, and able to do her housework. She has just given birth to her second son since her operation, and so far all has gone well.

CASE XXXVIII.—A single woman, aged 35, had suffered for years from increasing constipation, which had been treated by the most able physicians without improvement. She had associated with this constant attacks of nausea, headaches, and marked abdominal pain. Her weight fell to 78 lb., and she was very wretched and miserable.

In October, 1904, ileo-colostomy was performed, and in September, 1905, the colon was removed to the splenic flexure. Her recovery was splendid, and her doctor writes that she is now in very good health; her bowels act with an aperient. She has only an occasional headache and at times some abdominal distension and flatulence.

The patient herself writes to say "she is fully alive to the great improvement that has been made in her. Her weight is now 91 lb. I do not complain of the need of an aperient, as it now acts, and I feel a sound, healthy young woman."

CASE XXXIX.—A single woman, aged 43, who had suffered from marked constipation for seven years, and pain on the right side of the abdomen became marked. She rapidly lost flesh, and the right kidney became mobile and was stitched up in 1902. In 1904 appendicectomy was performed. After this constipation became most obstinate and mucus appeared in the stools, and she was in a continual state of discomfort and pain, and in July, 1907, colectomy was performed.

In January, 1911, her doctor writes: "She has lost her sallow appearance, the mucus has disappeared from her motions, the bowels are easily controlled, but she has some attacks of distension and abdominal pain. The abdomen is perfectly soft and supple, and there are no physical signs in it."

CASE XL.—A man, aged 29, had suffered all his life from chronic constipation. He was admitted in December, 1904, dying with acute ulcerative colitis. He was so ill that it was only possible to expose the lower end of the ileum and drain it. The very acute symptoms subsided, but frequent discharges of blood-stained foul mucus ran involuntarily from the anus.

In January, 1905, the ileum was introduced with great difficulty into the rectum. He was discharged much improved, but the fistulous aperture in the right groin had not closed. In September, 1905, the large bowel was removed.

In February, 1911, his doctor writes that "He is still alive, and there is no blood or pus in his motions. He is still very weak and suffers from myalgia. As at the operation his life was despaired of there is no doubt it was a success."

CASE XLI.—A married woman, aged 32, had been "going off" for years. When 16 she was in bed for seven weeks with a diagnosis of "gastric ulcer." Since then her bowels had been a constant trouble, pain under the right costal margin became marked, and attacks of vomiting occurred.

In 1906 a London surgeon performed gastro-enterostomy; but this gave little relief, and the vomiting continued.

In May, 1907, she was much worse, attacks of vomiting every fortnight. Her complexion was earthy, her tongue brown and constantly coated. A constant pain in the right iliac fossa pressed down and made the bladder irritable. Severe attacks under right costal margin accompanied this, and mucus was passed. Her condition at this time was described as desperate.

In May, 1907, colectomy was performed. From then she improved, gradually discarding her invalid habits and taking healthy walking exercise, and her general condition improved in every way. It was necessary to lace up the blind ends of the anastomosis in 1908. Her doctor writes that, "in looking back at this case, it seems almost incredible that this happy and contented young lady should be the same individual as the miserable cachectic creature of four years ago." She herself is unshakably of the opinion that, but for the removal of her "cesspool," she would not now be alive.

In January, 1911, she writes that she is still quite well.

CASE XLII.—A single woman, aged 48, had an attack of peritonitis with a discharge of pus per rectum when 9. Since 12 she had suffered from constipation. Had trained as a nurse in 1881, but had never been able to go on with her duties for any length of time. Since 1894 her bowels had never acted without drugs. Since December, 1897, she had led the life of an invalid. She was observed in 1899 to be very thin, of a muddy complexion with abdominal pain after all food. No appetite, constantly furred tongue. She never left her bedroom, and always required purgatives, etc., for bowel action. In 1904 these symptoms became more marked, more aperients were required. Persistent nausea was present, with occasional vomiting and increasing emaciation. Her doctor sent her up, believing that her constipation was the chief factor in her condition.

In July, 1904, her carious teeth were removed. No improvement.

In November, 1904, colectomy was performed.

In 1905, she developed tubercle at the right apex, and tubercle bacilli were found in the urine.

In February, 1911, her doctor writes that she has developed into a case of chronic phthisis. Her bowels act daily, but require a glycerine enema occasionally, so that the operation has certainly put the old constipation under control. She still has tubercle bacilli in her sputum. It is worthy of note that she was not emaciated in the last year or two.

CASE XLIII.—A single woman, who since 1894 had been the victim of most obstinate constipation. Defaecation was attended with pain. For seven years this had been associated with abdominal pain, sickness, severe headaches, debility, loss of appetite, and depression. Her weight went down to 99 lb. She had done no work since 1903.

In March, 1905, ileo-colostomy was performed, and she now writes to say, "My weight is 128 lb. I have a good appetite, and can eat anything without being sick. I have taken no medicine since 1907. Every one tells me how much better I look, and I feel so pleased to be so well again. I feel quite able to do my work without feeling overdone."

CASE XLIV.—A single woman, aged 41, who trained as a nurse. She had suffered for years from progressive constipation, with marked right-sided abdominal pain and frequent attacks of nausea and vomiting after food. She was losing flesh and had frequent headaches. Her skin was "yellow," and she suffered from marked mental and physical lethargy. She was so exhausted after a little work that, coupled with her abdominal pain, it was quite impossible to go on as a nurse.

In April, 1907, colectomy was performed.

In February, 1911, she writes that she has only twice had any pain since her operation. Otherwise her health is splendid. No constipation; no headaches or sickness, and she has put on flesh and maintained it, and is now in charge of a nursing home, and is most grateful for what has been done.

CASE XLV.—A single woman, who had suffered for years from abdominal pain and marked constipation. She had been treated medically since 1900 and been seen by various consultants and their suggestions adopted. In 1906 an attempt was made to deal with the pain by nephrorrhaphy. She was then kept in bed for three months, but her pain and constipation were not relieved, and the wasting became marked, so that malignant disease was suspected, but none found.

In 1909 again a consultant diagnosed dilated stomach. The pain, constipation, and vomiting continued, and her weight fell to 87 lb. She was found to show marked symptoms of auto-intoxication, and an ileo-colostomy was performed.

Her doctor writes in February, 1911, that she has almost entirely lost the old abdominal pain, her bowels act easily with an occasional aperient, she has regained her former weight, and takes an eight-mile walk almost daily.

CASE XLVI.—A single woman, aged 35, has been in indifferent health for some years. Constipation was severe, with loss of appetite, vomiting after food, sallow complexion, loss of weight, marked abdominal pain, mental depression, so that "life was a misery to her."

To deal with the pain appendectomy was performed in 1900. No relief.

In November, 1904, ileo-colostomy was performed.

After this she put on 28 lb., and became quite a different

looking woman, with a clean skin, bowels regular, appetite returned, and felt markedly better.

In March, 1907, a sharp attack of abdominal pain followed by vomiting caused the diagnosis of perforated gastric ulcer, and a surgeon opened the abdomen; none was found. Recovery uninterrupted.

Since then she has been in excellent health and spirits, and now writes that she is quite well and thoroughly interested in and pleased with life.

Case xlvii.—A single woman, who had suffered for years from severe constipation, and since 1905 had also passed mucus. This had been accompanied by great abdominal pain; her appetite had gone, and she had lost much weight. She showed marked signs of autointoxication.

In April, 1907, ileo-colostomy.

In January, 1911, her doctor writes that she is well nourished and looks well. Her colitis and constipation are quite cured. She has some abdominal pain still, and during an attack was seen by a consultant, who advised me to explore for gastric ulcer, which, however, I did not find.

She has been passing small uric acid stones from the right kidney, and this is associated with pain.

Case xlviii.—A single woman, who had suffered for years from extreme constipation, which had progressed, in spite of all treatment, up to an action once a fortnight. The act was accompanied by extreme pain, and was associated with left-sided abdominal pain, constant nausea, and attacks of vomiting.

In 1903 the abdomen was opened and a cystic ovary removed. Her condition became desperate; she was a yellow, sallow colour, markedly wasted, and at the end of her tether. For seven years she had been a complete invalid, and had scarcely been outside her house. At the time of the operation her condition was desperate.

In September, 1909, colectomy was performed, and the bowel was found firmly adherent, and a large mass of tuberculous glands was present, which involved nearly the whole of the mesentery of the small intestine.

In February, 1911, her doctor writes that "the improvement is really extraordinary. She has made a steady progress back to health. She is now quite plump again, and has put on a lot of flesh. She goes out and calls on her friends. She walks miles, and does all her housework. She is an entirely different person."

Case xlix.—A single woman, aged 40, had marked constipation for nine years, so that now by the aid of purgatives and enemata she averages one action a week. Frequent headaches. Constant cold hands and feet. Frequent abdominal pain. Is sallow and pigmented. Marked cystic changes in her breasts. She suffers from marked mental depression and inability. She cannot do any housework.

In August, 1910, an ileo-colostomy was performed, and she was discharged very markedly improved, much brighter mentally, her skin cleaner, vomiting and headaches gone. She is quite comfortable and feels much improved.

In February, 1911, she writes that she is still very pleased with her condition.

Case l.—A man, aged 43, had always been inclined to be constipated. In 1898 he went abroad and had several attacks of dysentery with marked abdominal pain. He was treated by the greatest authorities, with only temporary benefit, and in August, 1906, soon after his return home was seized with haemorrhage and pain.

In January, 1907, an ileo-colostomy was performed with much difficulty owing to the anchored contracted condition of the rectum.

In March, 1911, his doctor writes: "The result of his operation has been excellent. Before it he was incapacitated by the frequent recurrent attacks of chronic dysentery. Since the operation he has had no trouble of this kind and has been able to return to work. I shall certainly recommend an operation if I have a similar case to deal with."

THE death of the life tenant having occurred, the Royal Victoria Hospital, Dover, has now come into possession of a large property known as The Shrubbery at Crabble Hill, near Dover. It was left to the hospital by the late Mr. Richard Coleman, together with a sum of money for its maintenance as a convalescent home.

DR. H. C. GROVES, who is about to leave the town of Monmouth after some twenty-four years of practice there, was the recipient on March 31st of a silver salver, a purse of 110 guineas, and an album containing an address and the names of over 600 subscribers. The presentation was made in the Rolls Hall by the mayor, who said that every man who did public work was submitted by the public to constant tests, which in the case of a medical man were of a particularly trying kind. He had to be genial, to be possessed of even temper; to be prepared to be called upon at any hour of the day or night; and to be ready to sacrifice the joys of life to a large extent in order to serve the public. Through all these tests, and many more, Dr. Groves year after year had passed unscathed, and thus had won the general esteem and admiration of the population amid which he had dwelt so long. Wherever he might go, he carried with him their very best wishes.

An Address

ON

ARTERIO-SCLEROSIS AND THE KIDNEYS.

Delivered before the Kensington Division of the Metropolitan Counties Branch.

BY

SIR CLIFFORD ALLBUTT, K.C.B., M.D., F.R.S.,

REGIUS PROFESSOR OF PHYSIC, UNIVERSITY OF CAMBRIDGE.

(Continued from page 858.)

Bright's Disease and High Pressures.

Of the amyloid disease high arterial pressure is not a feature; but in acute parenchymatous nephritis and in acute interstitial nephritis, although in these maladies, and even in cases ending in recovery, the arterial pressures may rise suddenly to no inconsiderable heights and burden the heart severely, yet in them high pressures are of irregular and inconstant occurrence. Generally speaking, in England and in America, physicians from the time of Johnson and Wilks have divided chronic Bright's disease into Chronic Parenchymatous Nephritis and Granular Kidney, and the distinction is still recognized by Tyson* and Rose Bradford.[18] All biological classifications are of course arbitrary, and divided by no hard and fast lines; but broadly speaking this distinction corresponds with clinical experience. In most cases the contrast of symptoms suffices to determine a diagnosis between the two kinds; and even in cases of doubt the difficulty of differential diagnosis probably lies more often in the data or opportunities of exact observation than in a blend of these morbid processes. Whether in particular cases the differential features may be conspicuous or not, Granular Kidney and Chronic Parenchymatous Nephritis are, each of them, a fairly consistent series throughout.

In the "Chronic Parenchymatous" clinical series, then, high pressures are by no means invariable. In this disease the heart, whether by dilatation or hypertrophy may be enlarged on both sides, if not to the same degrees; and in many necropsies no very great enlargement is notable. But in the granular disease the arterial stress, rising early and enormously, tells primarily and in the main on the left ventricle; dilatation of the right side being a late and secondary event, a condition of heart failure. Dropsy in granular kidney is rather cardiac than renal in nature. In respect of high arterial tension, then, in these diseases we have to do with variables as yet unappreciated.

Once more. As we may have chronic parenchymatous nephritis with high arterial pressure, or with comparatively little excess, or even with none, so conversely we may have high arterial pressures without any manifestation of renal disease. But in this important part of my argument I must tread warily, as I am entering into contested positions. Still, keeping as close as possible to accepted hypotheses, it is now generally admitted, I think, that Mahomed, v. Basch, Potain, Huchard, and myself were justified in declaring that high arterial pressures may and often do arise without renal disease in any accepted clinical sense—that is, without Bright's disease. Mahomed did suppose this increment to be a warning of Bright's disease, to be indeed a signal of its initiation; v. Basch and Potain took it to be a sign, and indeed a manifestation, not of Bright's disease, but of arterio-sclerosis. We have seen that Huchard, regarding arterio-sclerosis not as an anatomical result of several diseases but as itself constituting a disease, interpreted high arterial pressure as the first stage of it, and accordingly named this stage Presclerosis; as Mahomed, interpreting it as the first stage of Bright's disease, named it Prealbuminuria. My position, however, was this: that in the first place arterio-sclerosis was no unity, was not a "disease" in the clinical sense; and in the second place that although it was often associated with high pressures these were no necessary condition of it—a doctrine in which for some ten years I stood unsupported. Then

*In his valuable work on Bright's Disease and Diabetes.

Groedel contributed evidence of arterio-sclerosis without high pressures, an independence which now seems to be generally if rather tacitly admitted. Had Dieulafoy discerned the different relations of arterio-sclerosis in granular kidney, in hyperpiesis, and in vascular involution without high pressures, he would have been less puzzled by the inconstancy of parallel between the arterial and the renal changes. For even under the exorbitant pressures of Granular Kidney the distal arteries may long resist deterioration; a degree of immunity which I have attributed in part to the protection afforded by peripheral spasm—an opinion with which Dr. Harry Campbell agrees. Moreover, in persons under middle age at any rate, the arteries seem able to resist excessive tension, say for four or five years, without much injury; whatever minor spots and streaks may be visible in those of the larger magnitudes.* For so long, if there may be some general fibrous increase of the intima, there is no splitting of the elastica, no subintimal hyperplasia. Indeed, as the cerebral arteries are among the first to suffer, the victim of granular kidney may die of an apoplexy while his large arterial trunks, whatever their loss of elasticity, are still in fair preservation.

In my Harveian paper of 1894, and again in the Lane Lectures of 1896, I stated accordingly that on eighteen years' experience of one case watched from first to last, and on a large experience of portions of many cases, a certain disease—that is to say, a fairly uniform series and correlation of symptoms positive and negative—is to be recognized and to be delineated, which, although marked from the outset by a rise of arterial pressures, does not follow the clinical course of Bright's disease in any of its modes, but manifests itself by other symptoms not here to be described. Furthermore, that it is not an expression of arterio-sclerosis, but generally speaking, if recognized in time, is curable; and even if recurrent, as frequently it is, yet after two or three recurrences, by diet and other vigilant precautions, may usually be banished for good. If however, as too often is the case, it defies treatment, or is neglected, the arteries undergo such strain as to issue in arterio-sclerosis. I stated, further, that arterio-sclerosis is not itself a disease, but an event or result of several diseases; and that of itself it is not a cause of excessive arterial pressures, but on the contrary, from beginning to end, is quite consistent with ordinary pressures. It was to this disease, in origin independent of arterio-sclerosis, that I gave the name of Senile Plethora, or Hyperpiesis, meaning by Hyperpiesis not simply a character of pressure, but a certain morbid series taken as a whole—a series of which this rise is but one of the principal characters.

Of this malady I have never offered an explanation, or nothing more than conjecture; I have been content to distinguish it as a clinical series from the recognized forms of Bright's disease. I am far, then, from denying that in this disease of Hyperpiesis the kidneys may have some concern. Passing over the "renal inadequacy" of Clark as either renal disease or a vague speculation, I may mention here the argument of Dr. Batty Shaw, in his Goulstonian Lectures of 1906, an argument which I will discuss more fully later. He says—putting aside problematical instances in which changes usually tending to high arterial pressures are subdued by intercurrent conditions, such as cardiac insufficiency or competing toxins—it is agreed that the cases which Huchard and Allbutt, and before them Mahomed more or less, have separated from frank Bright's disease under such names as Prealbuminuria, Presclerosis, or Hyperpiesis, do not follow the common course of disease of the kidney; yet dependent upon renal disorder of an insidious kind they are nevertheless; furthermore, on a fatal issue, some defect in the kidney will be found. The pressor element in particular is of renal origin, and is probably due to an escape of renal substance, or products of renal dissolution—of nephrolysis, to use a current word—into the blood. Now this explanation may or may not be true; my concern is to point out again that the distinction lies between Bright's disease and a malady which, if caught in time, is, if not always, yet usually curable, and when incurable abuts upon cardiac defeat or apoplexy, and does not at any stage even of a fatal career present uraemic symptoms; not, that is to say, anaemia, headache, nausea, lethargy, retinitis, convulsion, or coma. Hensen of Quincke's clinic (whose premature death is to be regretted) says: "I have convinced myself of this, that a blood pressure over 200 mm. may occur in cases of simple (*einfacher*) arterio-sclerosis in which clinical observation gives no support whatsoever (*keinerlei Anhalt*) to a diagnosis of renal disease." But Hensen had still to learn that in such cases even arterio-sclerosis is not a necessary factor. Whether in essence renal or not, the respective diseases—the fairly uniform series of symptoms, negative and positive—are widely different in course. And in the *post-mortem* room I demur that Dr. Shaw again does not draw a distinction between the atrophic or arterio-sclerotic kidney and the Granular Kidney technically so called, as do Professor Lorrain Smith and many other authors besides myself who believe the arterio-sclerotic kidney to be within limits still fairly capable, but who regard the Granular Kidney as corrupt, if not actively vicious from the beginning.

The slight and variable degrees or the absence of high pressures and cardiac enlargement in many cases of disease of the kidneys, even when their structure may have been impaired even to extremes, have for a long time been a puzzle to clinical observers. Some physicians have assumed that, if the heart is to be enlarged to any notable extent, besides the renal disease some correlated disorder of a systemic kind, vaguely indicated as a "cachexia" (Pässler,[19] Senator), must be associated with the renal disease, a condition scarcely favourable to cardiac growth. Others, with doubtful success, have looked for the determining factor of the high arterial pressures in the differences of the renal elements concerned—as of the glomeruli, for example; or in epithelial decay; or in the quantity of renal substance abolished; or, again, in absorption of disintegrating renal substance. On one clinical distinction, at any rate, we are all agreed: namely, that the form of renal disease in which we find the arterial pressures constantly and regularly exorbitant, and the heart notably hypertrophied, is the "Red Granular," which form in this respect also is to be distinguished from other diseases ending in shrunken kidneys, such as the "small white,"† terminal or original. In these other processes, it is true, some arterial tension and cardiac enlargement are often found, but not so early, so constantly, nor so enormously as in the "red granular" form. As regards the amount of renal structure, that the cardio-arterial stress is not directly at any rate as the sum of its detrition is apparent on comparison of red granular cases with cases of shrunken or damaged kidneys of other kinds in which the obsolescence of renal substance may in the sum be no less. In certain kinds of renal disease, such as the amyloid, in which the proper renal elements must be universally impaired if not obliterated, the heart may not be—in the amyloid is not—enlarged at all; nor the arterial pressures raised. And, when we look more closely at the red granular kidney itself, we find no definite relation between the destruction of the kidney and the rise of arterial pressures; the heart in these cases had often grown very large and the blood pressures very high before the disease had become manifest or importunate, or the urine much attenuated.

That Hasenfeld's hypothesis, which attributed the high pressures and enlarged heart to the geographical distribution of the arterio-sclerosis, namely, in the mesenteric area, had it been valid even for ordinary cardio-arterial hypertrophies and degenerations, is quite inadequate to explain the enormous cardio-arterial changes of granular kidney, has been proved by many observers; for instance, by the well-known researches of Marchand. I have said that Jores also in many cases of granular kidney with large heart and high arterial pressures had demonstrated that in the mesenteric area arterio-sclerosis was ill marked or virtually absent; and, indeed, that, speaking generally, the pancreatic, splenic, and cerebral arteries were, as a rule, more diseased than those of the bowels.

In thus turning our little lantern upon the correlations between high pressures, arterio-sclerosis, and renal affec-

* Recent transplantation experiments in animals to prove that high blood pressures do not injure the vessels seem to me to be very fallacious.

† Professor Bradford accepts the primarily contracting white kidney, indicating its often latent course in young adults. One or two of Jores, Prym and Roth's cases under the bundle name of *Schrumpfniere* may have been of this kind.

tions, we see a crucial point, although we find no *instantia crucis;* we meet many another baffled inquirer, each perhaps with his own guess, or scrap of information, but no signpost. What are the scraps? Well, as we have seen, that in many cases of Bright's disease, or of tuberculous, or calculous, or surgical kidney, pressures do not rise at all; that in others the rise is not predominant, and does not affect mainly the left ventricle but both ventricles, and in the usual proportions, after the way of, and often because of, failing heart; inconsistencies in strong contrast with the definite class in which from the first high pressures are predominant, and, consequently, the left ventricle, in the manner of the so-called "concentric hypertrophy," is affected chiefly, enormously, and until the stage of cardiac failure, perhaps alone. Another scrap is that this constant and conspicuous cardio-arterial enormity is the mark not of any kind of Bright's disease, but of the disease to which we give the name of Granular Kidney.*

If not eminently characteristic of the rest, yet it is true that in other chronic renal diseases, even in "surgical kidney," a tendency to augmentation of arterial pressures is to be noted; so we presume that in the affections of the kidney there is a something which provokes this excess; something which in the granular kidney is a constant, in the others a variable. Is this something engendered in or of the kidney itself? In the view of Aufrecht, which a while ago found no inconsiderable favour, the granular kidney—the conspicuous example of this pressure-provoking agency—is but a local expression of arterio-sclerosis, the renal implications of which colour the whole malady. But, like Huchard, Aufrecht also regarded arterio-sclerosis as necessarily associated with high pressures, although in 1894–5 I had proved that very frequently it is not; and in particular that even an arterio-sclerotic kidney may be and often is associated from life to death with arterial pressures normal for the age of the patient. In 223 cases of arterio-sclerosis Dr. Mott found the heart and kidneys affected in 141 (82 male and 59 female), but in 30 male cases and 55 female neither heart nor kidney was altered. A short time ago Dr. Mott kindly discussed with me 300 necropsies in his Department, in which he had noted that if, as it commonly happened, in cases of atheroma, including the cerebral arteries themselves, the renal fibrosis was not that of granular kidney, cerebral haemorrhage was relatively infrequent. This result of a large comparison agrees with the impressions which on this subject I received when I was a Commissioner in Lunacy. Now, as Dr. Mott himself observed, in pauper asylums, there is some selection of cases; among the insane a very large proportion of the cases of arterial disease are not those associated with explosive arterial pressures and large cardiac hypertrophy, whether of renal or non-renal origin; but are of a degenerative nature, with cerebral softening in the atheromatous areas. On the other hand, it is now ascertained that in the specific disease named, well or ill, Granular Kidney, the arterial lesion begins in the kidney, and that a more extensive arterio-sclerosis does not manifest itself until in one area after another it comes about, especially in the splenic, pancreatic, cardiac, and cerebral vascular areas. Yet it seems improbable that, as under the renal disorder pressures begin to increase, the strain would tell first on these smaller visceral twigs. In the renal area, indeed, where the vasa afferentia branch off from the interlobular, the pressure gradient is falling, and in the tufts which are affected early and severely, must, both by friction and by extension of bed, fall very quickly. High tension would, and does, make itself manifest sooner or later in the aorta and great vessels; but if the finer visceral twigs are among the first to be damaged, there must be some insidious humour playing on the periphery to initiate it? In one of Roth's cases, one of true "granular kidney" in a man aged 30, with blood pressures of 185–215 (death comparatively early, presumably from intercurrent causes), although the kidneys were typical, there was but little alteration of the larger vessels. Traube's notion that constriction in the renal area would suffice to enhance general pressures was erroneous; even sudden ligation of both renal arteries does not do it. If a peripheral arterio-sclerosis became almost universal, it is possible that pressures might rise; but in Granular Kidney such extensions come about later; while, conversely, at the outset of granular kidney, even in thirty to forty days, arterial stresses may have reached very high degrees. Certainly the high pressure is not engendered, as some have supposed, of mere chronicity.

Weigert[20] adopts the opinion, and it is one to which my own had independently inclined, that the secret of pressure increase lies in destruction of the renal parenchyma; Dr. Batty Shaw's conjecture also, to which I have alluded, may not be widely different. But Ziegler[21] regards glomerular lesion as the essential factor of pressure, and thinks that, if the vessels were clear, the impaired epithelium should recover itself. Ziegler's views command attention, but to me are inconclusive because he does not always discriminate between the granular, the arterio-sclerotic, and—what is not quite the same thing—the senile atrophic kidney, two forms in which the glomeruli seem to suffer passively; a remarkable inconsistency, as he was, so far as I know, the first pathologist to recognize the arterio-sclerotic kidney: a "renal arterio-sclerotic atrophy" . . . "a special form of contraction of the organ" due primarily to sclerosis of the renal arteries with, usually but not necessarily, participation of the intimate renal ramifications also. In granular kidney, although it is true that lesion of the finer arteries of the organs is an obligate condition, as if these vessels might be the gate of entry of some histolytic substance or be peculiarly susceptible to it, we seem to have to do with some pernicious agent corroding unit by unit the whole gland.

After what has been said, we shall not wonder that lesion of the glomeruli has loomed large in this inquiry. As angry spots these structures have caught the eye of all observers, both as centres of arterial disease with quasi-infarctive effects, and of fibrous hyperplasia; lesions which, however, do not, as Jores admits, by any means always run parallel. In the arterio-sclerotic kidney also, by which I mean the state in which this organ, in association with many or most of the other parts of the body, shrinks under a general vascular fibrosis or starvation, the glomeruli seem to fail in numbers so considerable that it is not easy to say that the sum of their defect is behind that in Red Granular kidney, in which their suppression is far from being universal. Differential counts would be so troublesome that the personal equation would enter for too much; but most recent observers—Jores, for example—find no parallel between heart enlargement and suppression of glomeruli. As, however, Loeb[22] assumes the rise of pressures and the growth of the left ventricle to be in direct proportion to the destruction of the glomeruli, to test this statement Jores injected a number of shrunken kidneys, but in many of those unattended with cardiac hypertrophy found the glomerular destruction to be no less; and many damaged glomeruli, whatever their remnant of functional value, were still permeable. It is a notable point in Rautenberg's experiments, to be mentioned presently, that although rise of pressure and cardiac hypertrophy supervened, the glomeruli were intact. Loeb is of course well aware that in many cases of high pressure mere obliterations in the renal area are far too limited to influence general blood pressure, while in other cases of cardio-arterial pressure strain no evidence of renal disease can be demonstrated on necropsy; wherefore he postulated some wider reflexes, operating especially through the brain—an argument in which he became speculative, if not vague. However, the point which I now desire to emphasize is that this distinguished pathologist admits the not infrequent occurrence of high-pressure cases without renal disease. Pässler is of the opinion, already mentioned, that the correspondence with the cardiac enlargement lies not merely in the glomerular but in the total renal defect, and Professor Rose Bradford seems to take a similar view. Charcot, however, argued that glomerular defect entails defect of the whole secretory unit. From Rautenberg's experiments, as in some cases of "surgical kidney," it would seem that a mere annulling of renal substance without active glomerular disease may, if large enough, provoke a rise of arterial pressures. Histologically, were the glomeruli in Bright's disease the seat not of arterio-sclerosis but of endarteritis obliterans, we might have a criterion of an irritative against an atrophic

*I take this as accepted; but I may add that Jores in his last (*D. Arch.*, 1909) paper carefully recorded the cardiac condition on Müller's method in unsorted cases of shrunken kidney and found definite hypertrophy by no means constant.

lesion of these elements. But we must take it for the present from Jores that the arterial change is arterio-sclerotic, as recognized in subintimal hyperplasia with split elastica, and in its disposition to fatty degeneration, a kind of decay to which endarteritis obliterans is less prone.

Dr. Batty Shaw[23] attributes the rise of pressure to suppression of kidney substance, but not in a negative sense. He looks to a positive effect of absorption of the gland into the system as a hypertensive poison; a curious construing of Johnson's presumption that the "stopcock action" of the peripheral vessels served to protect the periphery from a previously tainted blood. Dr. Shaw's conjecture is that kidney stuff of its own nature acts hypertensively; and that not in Bright's disease only but also in the hyperpietic disease of Huchard and myself the kidneys are undergoing some kind of solution and diffusion into the blood current, with the effect of general arterial constriction and consecutively of arterio-sclerosis. He supposes the only differences of Hyperpiesis to be that this solution and diffusion is not so concentrated, or so virulent, or perhaps not so specific, as to issue in the symptoms we recognize clinically as Bright's disease with its more familiar train of symptoms. Dr. Shaw alleges that injection of extract of renal cortex, prepared by the method of Tigerstedt and Bergman, drives up blood pressures to degrees unapproached by any other such organic extracts except the pituitary. However, later experiments on the point fail to support this allegation; they are doubtful or contradictory. Maragliano[24] made two series of experiments in this way; he injected kidney pulp of dogs into rabbits, producing—so I gather from the extracts—little rise of pressures, but a general cytolysis, in which the kidney was implicated. But these injections from one species into another seem open to the objection of violation of the idiosyncrasies of animal species (Nuttall and others). Pearce[25] injected extract of kidney—both from healthy and nephritic organs—into animals, with indecisive results; but, on the whole, so far as any effect on arterial pressures was perceptible, it was slight and transient, and followed by a fall. Also he injected serum from dogs in which large portions of the kidneys had been excised, and from others in which an artificial nephritis had been induced; but the evidence of a pressor substance, if any, was very slight. In our laboratories the researches of Professor Dixon and his colleagues and pupils have led us to similar conclusions.

However, if with Dr. Shaw we might assume a latent renal distemper sufficient to taint the blood but not gross enough to amount to Bright's disease, we might find a solution of the problem of Hyperpiesis. Dr. Shaw does not forget that renal cortex is not inexhaustible, and that under the morbid conditions postulated its reproduction could scarcely be very ready; indeed, with organs thus labile, it would presumably at no great interval of time be expended, and before that period rather reduced than multiplied. Now, the course of Hyperpiesis, as described by Huchard and myself—a disease which Dr. Shaw would draw into the net of primary renal causation—may, and frequently does, continue for years upon years—from ten to fifteen years—before its final events, not of uraemia, but of cardiac defeat or of cerebral haemorrhage, appear. And I think Dr. Shaw does not give weight enough to the experience that our cases of hyperpiesis, if detected in good time, are curable, and curable repeatedly; unless perchance he supposes that our remedies act favourably by virtue of some influence on the kidneys not directly intended or recognized by us. Again, ought we not to find that other kinds of disturbance of a kidney—as by a calculus or by a mass of tubercle, for instance—by vexing the renal tissue and by promoting the assumed disintegration of the cortex and diffusing it into the blood, should run up arterial pressures? Yet, as a rule, such incidental lesions, however solvent they may be of renal tissue around them, do not raise pressure nor deform the arteries or heart. And after all, were Dr. Batty Shaw's hypothesis to prove true, it would not set aside the practical distinctions between the series of clinical events long familiar to physicians under the name of "Granular Kidney" and the different series distinguished by Huchard and by myself as Presclerosis or Hyperpiesis.

But before dismissing mere obliteration of renal substance as a direct cause of rise of arterial pressure, certain experiments of Rautenberg must be mentioned.[26] Rautenberg works in Lichtheim's laboratory at Königsberg, and his report of two long series of experiments indicates that he is an expert investigator. At first he lost many animals (rabbits), but as he became more dexterous and more successful, about half of them survived. The improved operation consisted in tying the left ureter for three weeks, a period determined by experience. Then connexion was made anew with the bladder, and the right kidney was extirpated. Some lived for nine months, two for a year and a quarter, one for a year and a half, one for a year and three-quarters, one for two years and a half. The blood pressures were found to have risen distinctly in about nine months, and were then systematically measured in them and in controls. The rise proved to be proportionate to the duration; in the longer survivors it would rise (from 110–122) to 160–170. On necropsy arterial disease was found in all these cases. The heart was in like degrees enlarged up to 2 or 3 grams; but as in these animals the organs are inconstant in size, well-marked enlargements only were accepted. As in Dr. Harvey's experiments in our own laboratories,[27] the arterial disease could not be called arterio-sclerosis, but a calcifying necrosis rather. Indeed, the intima of a rabbit's aorta is so thin, consisting of scarcely more than an epithelial layer, that a reactive arterio-sclerosis could scarcely be developed in it. That the rise of pressures could not have been due to the arterial disease was evident in those animals which died in the earlier stages of high pressure, when the lesions of the vessels had not advanced beyond pinpoint and pinhead spots, a stage at which they could not have had any effect on the blood pressure. Rautenberg admits that if the arterial damage be a direct consequence of rising pressures, yet some forerunning toxic condition may make the arteries more susceptible to this abnormal stress.* Harvey's researches, however, by experiments in which compression only was used, demonstrated that mechanical stress was amply sufficient to establish this arterial lesion; and Rautenberg thinks that, in the animals under his operation, mechanical stress was, at any rate, the chief cause. But in Granular Kidney, so far as the peripheral visceral arterioles are concerned, we have seen that excessive stresses could not account for their primary arterio-sclerosis. Another remarkable result of Rautenberg's experiments was that even before the lapse of nine months—before, that is, any static effects of high pressures could be determined—the serum of these animals, even to dilutions of 1 in 20, dilated the pupil of the enucleated frog's eye (Ehrmann's reaction), thus indicating that this serum contained a pressor substance.† It is possible that by Rautenberg's method the kidneys were not merely suppressed but were irritated, and so made to discharge a hypothetical "renin" into the blood; still, on the whole they point to renal negation rather than to renal poison as the cause of accumulation of pressor influences in the blood. It is to be hoped that steps will be taken to verify Rautenberg's experiments.

Now, if there be but one pressor substance concerned, either this must accumulate always by fault of the kidney or there must be alternative conditions to give rise to its formation or excess. The kidney is supposed to be not an elaborating, but an eliminating organ. Unless it is, as according to Dr. Batty Shaw, by sacrifice of its own body, it may fail to remove, but it cannot manufacture a pressor or any other poison. A failure to eliminate may, it is true, depend sometimes on transitory disorder, sometimes on incurable disease; or possibly the strain of excreting such a poison might drive the kidney into disease, though, at any rate at first, or in milder cases, one would look rather for a hypertrophy, a state, however, of which, in these circumstances, we have no experience. In the light of recent researches—on gout, for instance—the fault seems to lie not in a failure of the kidney to excrete normal waste, but of the antecedent reductive processes to render the waste into substances attractive to it. For while

* It is remarkable that even in this process of experimental abolition of renal structure by a uniformly acting cause, after death a focal distribution of the lesions was noted.

† In this connexion I would refer the reader to various interesting researches on "Sympathomimetic Amines"—for example, to Barger and Dale, Wellcome Physiological Research Laboratories [recent, but no date on reprint (1910 ?)]. It is said, however, that normal blood gives more or less of Ehrmann's reaction.

refusing the gouty ingredient, they are often doing active work with other materials.

The opinion of observers who have worked at this subject is on the whole strongly in favour of some poison, whether a crude katabolic or an alien ingredient, at the back of both granular kidney and of the correlated peripheral arterio-sclerosis; these being concurrent effects of the hypothetical agent, as in the case of the similar and perhaps identical plumbous kidney. But the general arterio-sclerosis, after a while established in the large vessels, is probably less the result of poison than of consequential strain. As I have argued in respect of the kidney, so the arteries likewise by their peculiar limitations are disabled from expressing variously the various influences falling upon them; arterio sclerosis may be their monotonous response to sundry kinds of bane. Dixon and Harvey are disposed to identify this toxic agent with a certain product of putrid meat, allied to, or even identical with, ergot; this putrid matter, formed in certain circumstances in the intestines, may be absorbed into the system to raise pressures by vaso-constriction, and perhaps also to injure the kidney directly. Abelous and Bain have reported in the urine of normal adults pressor substances which, when retained in the system, incite rises of pressure; and, moreover, may damage the kidneys. Crofton[28] found that certain xanthine bodies, if pressed in full doses, caused at first granular and fatty deterioration of the renal epithelium; and in animals which survived six months the blood pressures rose and intertubular proliferation of the connective elements ensued. Professor Walker Hall has made experiments of a similar kind and with similar results (see his *Purin Bodies*, 1903). But these problems are as yet very obscure and difficult. For instance, Dixon and Harvey have to evaporate a litre of urine to obtain their putrescent toxin in appreciable quantity. Meanwhile, we shall not forget Professor Schäfer's caution that in any animal dying slowly the blood may be toxic.

Renal Infections.

Let us now turn to note the effects of toxins of other and more familiar kinds; in particular, those of the infective diseases—of scarlet fever, of diphtheria, and so forth. The focal distribution of lesion might lead us to postulate that these distempers affected the renal meshes rather by bacteria than by toxins, were it not that we have seen how the simplest lesions in the kidneys may be thus partial. And, as Ribbert observes, the general trend of evidence is that in the various renal diseases toxins seem to play a much larger part than the bacteria. However this may be, the lesions of the infective diseases do tend to attack the renal epithelium, as if directly by an acute degenerative process; but—as in the puerperal kidney—this corroding necrobiosis associates itself with irritative overgrowth of the connective elements, so that an interstitial nephritis arises not distinctively glomerular in distribution. Grancher and Sargent,[29] in cases of toxic nephritis, noted the epithelial (and glomerular) seat of the disease and the secondary nature of the interstitial changes. The original lesion, they observed, was in the secreting epithelium, the cells of which, if not destroyed, were swollen and fattily degenerated. Many tubules had vanished; others were shrunken or moniliform; others, again, thickened and abraded. Such lesions Welsh and Flexner demonstrated in diphtheria also, and opined that they might be due to bacilli *plus* their soluble products, or to the toxic principle alone; or, again, that a mixed infection might occur, the diphtheria bacillus or toxin combining, for example, with a streptococcus, for multiple mischief. To add to our perplexity, the putrescent toxin of Dixon and Harvey, although a hypertensive poison, is correlated, not with granular kidney, but with a tubular nephritis and dropsy of the tissues, strikingly manifested in dropsical distension of the glomerular cavities. Toxins apart, if the renal artery be tied (in animals), the epithelium begins at once to degenerate—a degradation due, it would seem, simply to deprivation of oxygen; if the animal survives for at least six months, an atrophic fibrous, but not a "granular kidney" proper, is established. In practice we are well aware that we cannot keep too vigilant a guard over the integrity of the renal epithelium, as evidenced by integrity of its own and the cardio-arterial functions. For many months after apparent convalescence this vigilance, if less incessant, should at due intervals be no less searching. Now in these infective renal diseases, as may be well discerned in young subjects, the arteries are not necessarily affected (see Jores's first paper, Cases XV, XVI, XVII, XVIII, both chronic and acute); not even in the scarlet fever kidney, as demonstrated in his case of the child aged 5, in which, nevertheless, the heart was somewhat hypertrophied and dilated. Riegel[30] has demonstrated the same rise of arterial pressure without any renal arterio-sclerosis in the scarlatinal kidney; and so has Kalb[31] likewise. This is very puzzling. Such cases as these mark off the toxin of infective nephritis, without intimate renal arterio-sclerosis although making for cardio-arterial strain, from the poison—if such there be—lying behind granular kidney, in which the intimate renal arterio-sclerosis and the enormous cardio-arterial strain are essential, and in some way correlated, events. Heineke published a case of acute dropsical nephritis in a man aged 29, without visceral arterio-sclerosis—for example, normal spleen, pancreas, etc., as determined after death—in which, on the lapse of ten or twelve months, arterio-sclerosis appeared in the arteries of the extremities; tempting us to guess that the dropsical fluid itself might have contained an arterial poison.

Nervous Factors.

Hitherto I have said little of any nervous factor in these problems; they are baffling enough as it is, and one is unwilling to seek the obscure by way of the obscurer. Briefly, Professor Rose Bradford[32] has pointed out how stimulation of many afferent nerves produces general constriction of visceral blood vessels, including those of the kidney, with consequent rise of arterial pressure; and that other great fluctuations in the renal circulation are produced by excitation of the central ends of the depressors, or, again, of the central ends of the posterior roots of certain lower dorsal and upper lumbar segments, whereby the often assumed association of renal engorgement with general vaso-constriction is manifestly obtained. But as yet from this side of the problem we receive little light, although we may speculate whether our hypothetical toxin or toxins raise arterial pressures directly by acting on the peripheral neuro-muscular machinery, or indirectly by the middle term of some renal product having such an operation? Of this at least we may be sure, that the intimate renal arterio-sclerosis of granular kidney is no incidental effect of vasomotor tides; that this primary and essential effect is brought about by some virus, whether, renally speaking, autogenous or exotic.

The Adrenals.

I must not omit to allude to Wiesel and Schur's hypothesis, favoured by Josué, that the rise of pressures in renal diseases is not attributable to the kidney at all, but is an accidental event due to a variable implication of the contiguous adrenals (the chromaffin system). The constancy of pressure excess in Granular Kidney might be explained by a special proclivity of this mode of nephritis to propagate itself in their direction; or again by some community of miscarriage in the organs as pairs. This hypothesis has called forth a multitude of papers beyond quotation; fortunately the matter is provisionally summed up for us by Erwin Thomas, of Marchand's laboratory.[33] After a close survey of a large number of specimens, Thomas concludes that in renal disease the adrenal cortex is much oftener affected than the medulla; for instance, he found in forty cases of shrunken kidney an enlarged cortex. But he often found the same enlargement where the kidneys were intact; or with simple non-renal athero-sclerosis. The medulla he found no more affected in chronic renal diseases than in relatively normal controls. In a word, he was unable to discover that either cortex or medulla behaved in ways consistent with any known morbid series, renal, cardio-arterial or other.

Conclusion.

In conclusion, what issues out of this discussion to elucidate the relations between arterio-sclerosis and the kidney?

May we not go this far?—That arterio-sclerosis being almost the only terms in which an artery, apart from implication in surrounding tissues, can respond to irritation, we should expect it to give this peculiar response to

various untoward influences. In granular kidney it responds first by athero-sclerosis of its intimate intervisceral twigs; secondly, at a later period, when not these vessels but the systemic trunks suffer under another influence, under the stress, that is, of excessive pressures, the vessels again make the only response of which they are capable; they express their reaction to a different injury also in similar terms of arterio-sclerosis. Leaving now kidney disease and turning to the series which Huchard called "Presclerosis"—my Hyperpiesis—a series in which as yet the kidneys have not been convicted of complicity, we may find again arterio-sclerosis; but only after the mode which in Granular Kidney affects the arteries of large and middle magnitudes under tensile strain, a secondary, and often preventable result. To the arterio-sclerosis of Hyperpiesis the kidneys, so far as yet known, stand in no correlative relation.

But there is yet another arterio-sclerosis, or, at any rate, an arterio-sclerosis found in quite another category—namely, the arterio-sclerosis which in 1894 I separated as the senile or decrescent form. Whether it is histologically identical or not with the kind of which we have been speaking is as yet an open question; but clinically it is distinguishable, as it arises independently of high arterial pressures, or, at any rate, under pressures not excessive for the time of life. Now in this mode of arterio-sclerosis the kidney is often altered, perhaps always, more or less. This alteration, which, again, usually puts on the shape of a shrunken or deformed kidney, has little pathological affinity with the granular kidney which it may simulate. Besides the granular kidney which goes wrong with an intimate arterio-sclerosis of its own, there is a kidney deformed in the course of a general arterio-sclerosis not its own, and if more or less decaying in consequence of decay of its nutrient arteries, yet without any original perversion. A starved but not a corrupt kidney. This form some of us have long tried to differentiate, being disposed to see in it rather a negative state, a state more or less inadequate in regard of margin of safety, but sufficient for the smaller life of an elderly man. Dr. Sainsbury has emphasized "the marvellous residual vitalities of damaged organs." This kidney contains islands of fairly normal renal tissue sufficient for the humbler sphere of life, by which I was disposed to contrast it with the true granular kidney, which I had regarded as necrobiotic all through. But so sharp a contrast cannot quite be maintained; in the granular kidney, also, there are islands of fairly normal tissue, and the essential difference seems as yet to lie, not within the compass of the kidney, but—as we have surmised—in some poison at the back of the kidney and the arterial disorder alike. However this may be, the two kinds of kidney, often similar in aspect, at any rate superficially, are radically different in nature—a difference which, if hardly to be recognized in an effete organ, yet in the clinical series to which it belongs is, in uncomplicated cases, unmistakable. And in this distinction, as my citations have proved, I am far from standing alone.

Professor Lorrain Smith's conclusion in our joint paper was accordingly, that the arterio-sclerotic kidney is a local phase of general arterial disease, producing in the kidney just the alterations which it produces in other organs of the body—alterations which need not amount to anything very grievous, as they are compatible with many, if sere and yellow, years of life; but that granular kidney, on the other hand, is some form of progressive inflammation of the gland as such, the structures essential to its function being attacked. In this fatal disease arterio-sclerosis appears in two ways—primarily and essentially in the fine arterioles of the organ itself; secondarily and later in the systemic arteries, as the effect of strain under the excessive arterial pressures in which granular kidney is always and regularly involved. The arterio-sclerotic kidney, on the other hand, if it may arise in the later stage of strained arterial systems in Hyperpiesis, is most common in the decrescent form of arterio-sclerosis.

If I may formulate these provisional conclusions, they would be as follows:

CLASS A.—*Chronic Bright's Disease.*

A (i). Primary intrinsic intrarenal arterio-sclerosis not due to high pressures; in granular kidney constant; in other kinds inconstant.

A (ii). Secondary extrinsic arterio-sclerosis; later; due to high pressures.

A (iii). A few mixed cases; renal disease supervening on a general arterio-sclerosis, whether of "Hyperpiesis" or "Decrescence"; not originally Bright's disease.

CLASS B.—*Not Bright's Disease.*

B (i). The "arterio-sclerotic kidney"; kidney alteration secondary to general arterio-sclerosis, more frequently of the decrescent kind without high pressures

B (ii). Less frequently, entailed by the consecutive arterio-sclerosis of "Hyperpiesis."

High pressures may be considered as (i) obligate with Granular Kidney; (ii) irregularly associated with other kinds of Bright's disease; (iii) independent of Bright's disease ("Hyperpiesis").

REFERENCES.

[1] Researches in the Period 1875–1881, vide *Trans. Intern. Med. Cong.*, 1881. [2] *Med.-Chir. Trans.*, 1872. [3] Paper read before the Royal Medical and Chirurgical Society, January 15th, 1897. [4] *Deut. med. Woch.*, 1905, p. 1873. [5] *Practitioner*, March, 1906. [6] BRITISH MEDICAL JOURNAL, March 31st, 1907. [7] *Clin. Journ.*, 1907. [8] *Lancet*, March 16th, 1907. [9] *Virchow's Archiv*, 1909. [10] *Deut. Arch. f. klin. Med.*, lix. [11] *Virchow's Archiv*, 1907, vol. clxxxviii. [12] *Virchow's Archiv*, Bd. 196. [13] *Virchow's Archiv*, 1909. [14] Allbutt and Rolleston's *System of Medicine*, second edition. [15] *Systemic Pathology*, 1910, p. 721, etc. [16] *Pathol. Anat.*, 1909. [17] *Virchow's Archiv*, Bd. 195, Heft 2. [18] Loc. cit. [19] Verhl. d. path. Gesellsch. Méran, 1905 (reported in German journals of the date). [20] *Die brightsche Nierenkrankheit*, Berlin, 1906, and *Volkmann's Sammlung*, Nos. 162, 163. [21] Ziegler, *Deut. Arch f. klin. Med.*, Bd. xxv. [22] Quoted by Dr. Theodore Janeway. [23] Goulstonian Lectures, 1906. [24] Two references: (1) *Virchow's Jahrb.*, 1903, vol. ii, p. 244; and (2) *Gaz. d. Osped.*, October 7th, 1909 (EPITOME, BRITISH MEDICAL JOURNAL, 1909); I have not seen the original papers. [25] *Journ. of Exper. Med.*, 1909. [26] *Deut. med. Woch.*, March 24th, 1910. [27] *Virchow's Archiv*, 1909, Bd. cxcvi. [28] *Amer. Journ. Med. Sci.*, vol. cxx, p. 592, 1900. [29] *Rev. d. méd.*, 1901. [30] Riegel, *Zeit f. klin. Med.*, Bd. vii. [31] Kalb, *Muench. med. Woch.*, 1903. [32] Goulstonian Lecture, 1898, and later papers. [33] *Ziegler's Beitr. p. Anat.*, vol. xlix, December, 1910.

ON THE INTERDEPENDENCE OF THE CIRCULATORY AND RESPIRATORY SYSTEMS.

BY IVY McKENZIE, M.B.,

GLASGOW.

THE factors which contribute to a fatal issue in acute lobar pneumonia are very difficult to estimate. The infected patient is subjected to the adverse influences of a complicated series of abnormal processes, which, for the sake of convenience, may be termed chemical and mechanical. The chemical agencies probably include the disintegrating bacteria, the local products of the reaction between the micro-organisms and the host, and various other substances of abnormal quantity or quality which originate as a result of the interference of toxins with the normal metabolism in parenchymatous organs. These processes manifest themselves in well-recognized anatomical changes in the liver, the kidneys, and the cardiac muscle, and the clinical manifestations of the disease indicate a reaction on the part of the nervous system also. The degree to which the parenchymatous organs are affected depends on the amount of abnormal chemical substances present, and the affinity of these for the affected organs. The progress of the disease will be determined largely by the reaction of the bone marrow and other tissues which supply the antisubstances necessary to hold the noxious chemical processes in check. The issue of pneumonia, however, may be influenced by the variation in mechanical conditions incident to the disease. The pain of the pleurisy interferes with free movement of the chest wall, and an extensive consolidation, too, limits the expansion of the thoracic cavity and creates an obstruction to the pulmonary circulation. The work of the right ventricle is thus increased, and if the cardiac muscle be affected the efficiency of the organ may be seriously prejudiced.

In the case of those conditions which are classed collectively as bronchopneumonia in children, the mechanical difficulties are often very pronounced. Rapid respiration and cyanosis are common features of bronchitic affections, accompanied by rickets and atelectasis. In many of the cases the toxic effects of the pneumonia are much less serious than the physical disability under which the heart suffers in maintaining the circulation. An extensive clinical and correlated *post-mortem* experience has established this fact beyond all doubt.

Within very narrow limits the healthy heart preserves a definite shape and size, varying only with the age and weight of the individual. There occur, however, in

certain pathological conditions well-recognized modifications of shape and size. In chronic Bright's disease the left ventricle becomes greatly enlarged. The nature of this enlargement and change of shape is fairly constant and gives a definite abnormal shape to the pathological heart. Aortic and mitral disease are also responsible for enlargement and change of shape more or less characteristic of these diseases—the heart of aortic regurgitation, for instance, is known as the "cor bovis." Where there is tuberculous adhesive pleurisy or chronic fibrotic phthisis the right side of the heart is often enlarged; and a similar variation is not infrequent with chronic bronchitis and emphysema. Now, with the exception of the latter cases, the cardiac change is associated with an interference with the normal dynamical conditions inside the vascular system itself. On the one hand, the peripheral blood pressure is increased by the vaso-constriction of chronic Bright's disease, or by changes in structure of the smaller vessels in arterio-sclerosis; or, on the other hand, the mechanical efficiency of the pumping apparatus is compromised by the valvular defects in the cardiac apparatus itself, and the enlargement is the result of an attempt to compensate for this defect. When, however, a change in the size and shape of the heart is observed in an otherwise normal vascular system, associated with advanced disease of the lung or chest wall, one has then to deal with the result of extraneous influences—with the effect on the vascular apparatus of forces from without, and the extent to which an interference with normal pulmonary expansion or deficient thoracic movement can be correlated with a change in the size and shape of the heart may be taken as indirect evidence of the part played by the normal respiratory movements as factors which make for an efficient circulation.

The cases in which evidence in support of this contention was present were of two kinds: (1) Cases in which there was present an extensive collapse of the pulmonary tissue; and (2) cases in which there was an advanced degree of rickety deformity of the chest wall. In the great majority of cases of severe rickets collapse is present in addition to deformity.

Cases illustrative of Atelectasis and Cardiac Failure.

CASE I.

A girl of 7½ years, fairly well developed, had a severe diphtheria followed by paralysis of the muscles of deglutition. An aspiration pneumonia was supposed to have followed, and after eight weeks' illness she died. For a fortnight previous to her death she was very pale and suffered from breathlessness, and for some days before death there was oedema of the lower limbs. *Post-mortem* examination showed very extensive atelectasis in both lungs, the right upper lobe and the left lower lobe being completely collapsed; while the remaining lobes were greatly distended. The child weighed 3 st., and the heart weighed 7½ oz. The form of the heart was abnormal. It was broad proportionately at the base of the ventricles and rounded or almost flattened at the apex, and both ventricular walls were hypertrophied. The venous system was engorged, and the parenchymatous organs showed signs of passive venous congestion. The cardiac muscle showed no signs of fatty or fibrotic degeneration.

Fig. 1.—This diagram shows the bnormal shape of the heart, with s broad base and rounded apex.

CASE II.

A boy of 2 years admitted to hospital suffering from bronchopneumonia. He died after an illness prolonged over ten weeks. He was fairly well developed, and the chest was of normal shape. During the last two months of illness he was pale, and his respirations were rarely under 50 per minute, and sometimes were 80 per minute. The pulse ranged between 140 and 160 per minute. While at the beginning of his disease the temperature varied between 101° and 103.6°, for a period of a fortnight during the last six weeks there was no febrile disturbance beyond an occasional rise of temperature to 101° and 102°. For a few days before death there was oedema of the lower limbs. *Post-mortem* examination in this case showed the heart to be enlarged and relatively broad over the whole extent of the ventricles. The interventricular septum, as demarcated by the descending coronary artery, occupied a relatively normal position. The heart weighed 4 oz. and the body weighed 22 lb. On opening the heart, both the ventricles were found to be hypertrophied. Fig. 1 shows the abnormal shape of the heart, and Fig. 2 shows a transverse section of the ventricles with great hypertrophy of the walls, more especially of the right ventricles and the septum. On microscopic examination the cardiac muscle showed no signs of fatty or fibrotic degeneration. The lungs were collapsed along their posterior portions and at places along the anterior margins. Microscopical examination showed that the pathological lesion was one of collapse. While the evidence of old bronchopneumonia was still present, the process was no longer an acute one, and there was no sign of recent inflammation. There was great engorgement of the whole venous system, and passive congestion of the parenchymatous organs.

Fig. 2.—This diagram shows the great thickening of the wall of the septum and of the right ventricle.

Cases illustrative of Chest Deformity and Cardiac Failure.

CASE I.

A girl, 8 years of age, with very extensive rickety deformity of the chest and lower limbs, was admitted to hospital on account of breathlessness. While under observation, extending over five weeks, she had no abnormal rise of temperature. The chest movements were described as being restricted in the upper part of the thorax. The respirations numbered 30 to 50 per minute, and the pulse from 150 to 130 per minute. *Post-mortem* examination showed that the heart weighed 7½ oz., while the body weighed 30 lb. The heart was of firm consistence, relatively broad, and with a somewhat rounded broad apex and short in length from the apex to the base of the ventricles. On opening, it was seen that both ventricles had participated in the hypertrophy, although the most marked hypertrophy was that of the interventricular septum. The right auricle was dilated. The cardiac muscle showed no signs of fibrotic or fatty degeneration. The lungs were greatly distorted in shape. The anterior margins were collapsed, and a line of depression was present on the anterior surfaces corresponding to the site of junction of the ribs with the costal cartilages. The distortion of the lungs at this line of depression was so great as to give the anterior borders the appearance of being tilted forward about 45 degrees from their normal position. The anterior borders were airless, and there was considerable collapse on the posterior aspects of the upper lobes of both lungs. There was no evidence of acute inflammation in the lungs. Examination of the thoracic cavity showed a striking deviation from the normal. It was greatly contracted in its upper half, and this contraction was due to an in-sinking of the ribs along the line of their articulation with the costal cartilages. It was as if pressure had been exercised along this line on either side, in a direction downwards and inwards so as to produce an approximation towards the middle line, and an obliteration of the upper and anterior part of the thoracic cavity. Towards the diaphragm the cavity widened, and the line of depression gradually disappeared. The ribs were firm and well ossified. There was general venous engorgement and passive congestion of the parenchymatous organs.

CASE II.

A boy of 1½ years with extreme rickety deformity of the chest. The chest was of the fiddle-shaped type, very much contracted at the level of the axilla, and expanded at the insertion of the diaphragm. Respirations were rapid and shallow, varying from 50 to 80 per minute, and the pulse-rate was from 150 to 180 per minute. The respiratory movements were confined almost entirely to the abdomen and lower part of the thorax. For a week before death there was oedema of the lower limbs. *Post-mortem* examination of this case showed an abnormal shape and size of the heart. The organ was of firm consistence. It was broad at the base and relatively short from the apex to the base of the ventricles. The apex was rounded off in the arc of a very large circle. The anterior interventricular groove was not displaced relatively. The right auricle was greatly distended. A transverse section through the ventricles showed marked hypertrophy of the walls of both chambers, more especially, perhaps, of the right ventricular wall and the interventricular septum. The shape and degree of the hypertrophy of the heart resembles almost exactly the condition seen in Case II, where there was extensive collapse following a bronchopneumonia, but no deformity of the chest wall. In this case the heart weighed 3¾ oz., and the body weight of the child was 21 lb. There was no fatty degeneration or fibrosis of the cardiac musculature. The lungs were distorted, the anterior being marked off by a deep furrow which corresponded in site with the line of junction of ribs with costal cartilages. There was a considerable degree of collapse along the anterior margins in front of the furrows, and there was also extensive atelectasis in the posterior portions of both lungs, more especially in the upper lobes. There was no evidence of recent

inflammation. The thoracic cavity was very much diminished in extent. The only portions which retained their normal contour were the recesses on each side of the vertebral column posteriorly. The anterior mediastinum was almost obliterated by the in-sinking of the ribs along the line of the rosary. The thoracic cavity was enlarged on the plane of the diaphragmatic attachment. The ribs were soft and pliable, and could be bent like green wands. They contained practically no true bone substance. It was possible to cut microscopical sections of some parts of the ribs without subjecting them to a process of decalcification. The venous system was congested, and there was passive congestion of the parenchymatous organs.

On reviewing the results of these observations, one common characteristic emerges—in each case the heart is about double the normal weight relative to the weight of the body, and in each case the enlargement is unassociated with any other abnormality of an anatomical nature in the vascular system. As regards the hypertrophy itself, it is to be noted that while the right side and interventricular septum participate in a greater degree there is also in every case a hypertrophy of the left ventricle. The associated anatomical abnormality is in every case that of a part of the respiratory mechanism—the lungs, the chest wall, or both. The facts, then, which present themselves for correlation are these:

1. General hypertrophy of the heart in an otherwise normal vascular system, with relatively greater increase in size of the right side, ending in cardiac failure.
2. Collapse of the pulmonary tissue and deformity of the chest wall.

The heart of the healthy subject maintains a size which bears a definite relation to the size and weight of the individual, and which is independent of the amount of bodily exertion within very wide limits. The heart of a man who pursues a sedentary occupation is no smaller than that of a man whose occupation involves a moderate amount of physical exertion; and the amount of work performed by the organ may be greatly increased without in any way prejudicing its efficiency or increasing its size relative to the weight of the body. This property of adaptability is inherent in the heart, and is aided by compensatory variations in pressure throughout the vascular system regulated by the vasomotor apparatus. The increase in size of skeletal musculature, resulting from physical exercise, develops *pari passu* with an increase in the weight of the heart; and the extra work entailed on the left ventricle is balanced, as Leonard Hill has pointed out, by the aid afforded by the more active muscles in returning the blood through the venous system; the increased thoracic movements in additional muscular activity contribute also to meet the extra demand which is put upon the circulatory apparatus. Moreover, the cardiac muscle itself would seem to possess the capacity of immediately adapting itself to an emergency; for example, Stolnikow has shown that when a ventricle in diastole is artificially filled so as to contain even six times the normal amount of fluid it is able with the next systole to drive out several times the normal amount; and in the same way an increased arterial resistance is immediately overcome by the succeeding ventricular contraction. The heart thus possesses an enormous power of adaptation, and when it shows signs of great hypertrophy and consequent inefficiency such a condition may be regarded as being due to one or more of the following causes:

1. Increased work, determined either by an increase in the number of beats per minute, as in exophthalmic goître, or by increased force demanded against abnormal peripheral resistance, as in renal disease or arterio-sclerosis.
2. Some defect in the pumping apparatus itself, such as stenosis of the valvular orifice, or valvular defect causing regurgitation.
3. Failure of accessory powers of circulation, which include the variations in intrathoracic pressure, the expanding and collapsing lungs, and the movements of the skeletal muscles.

When the cases described are viewed in the light of these considerations, it is obvious that the causes referred to under the third heading constitute the main factors in the production of the cardiac enlargement; at the same time it must be recognized that in each case the pulse rate was abnormally high, although even here the increased pulse-rate was probably secondary to the increased respiratory-rate or associated with the cyanosis incident to the deficient respiration. In any case, the factors that are anatomically associated with the hypertrophy are: (1) Atelectasis; (2) rachitic softening and distortion of the thoracic wall.

Atelectasis and Cardiac Failure.

In the present state of knowledge it is impossible to determine exactly the modification of physiological respiration which is determined by collapse of a considerable portion of the lung. Possibly a vasomotor reaction plays a part, accommodating the organism to the new conditions, or, as Keith suggests, reflex contractions of the muscular rings of the bronchioles may exercise a regulating influence on the disturbed balance of pressure. The physical changes are those, however, which are most easily estimated. When a portion of lung collapses, there occurs with inspiration distension of the alveoli of the expanding parts; at the same time the relatively diminished pressure in the atelectatic portions determines a flow of blood to these parts, whereas the compensatory emphysema gives rise to a resistance to the blood flow through the distended portions of the lungs. In this way there occurs circulation of a considerable portion of blood through portions of lungs where oxygenation cannot take place, whereas the air circulates through portions where the emphysematous distension of the alveoli hinders the passage of the blood through the capillaries. The results of such a condition are:

1. Deficient oxygenation of blood, with dyspnœa and increased cardiac action.
2. Increased resistance to the flow of blood through the emphysematous portions of the lungs, and the consequent embargo on the right ventricle.
3. Stagnation of blood in the collapsed portions of lung, with the result that the work of the right ventricle is further increased, and in addition the heart is deprived of the assistance of the expanding and collapsing lung in furthering the blood flow.

Disease of the Chest Wall in Cardiac Failure.

The diseases of the chest wall which are here concerned are:

1. Softening of the ribs due to rickets.
2. Deformities due to rickets, tuberculous caries, etc.

It is obvious that where rachitic decalcification has produced softening of the bones, deformity is also certain to supervene. Such processes are most severe between the ages of 9 months and 2 years. As a result of loss of elasticity and subsequent deformity, collapse of the lung tissue is not infrequent, so that the rachitic chest is further embarrassed by the conditions which have been considered in the preceding paragraph.

The nature of rachitic deformity and the extent and distribution of a concomitant atelectasis are worthy of notice because they afford a strong confirmation of the conclusions to which Keith has come regarding the mechanism of respiration in man. In emphasizing the necessity of recognizing surfaces of direct and of indirect expansion on the lung, Keith has rendered a great service to the study of pulmonary diseases in children. He has pointed out that the mammalian lung is not equally distensible in all its parts, and that it does not expand equally in all directions during inspiration. Of the five areas, he says, which one may distinguish on the surface of the human lung, three are in contact with stationary parts of the thoracic wall, and therefore cannot be directly expanded. These three pulmonary surfaces are:

1. The *mediastinal* in contact with the pericardium and mediastinal structures.
2. The *dorsal surface* lying between the spinal column and the spinal segments of the ribs—those parts of the ribs to which the erector spinæ is attached.
3. The *apical surface*, the pulmonary area lying in contact with Sibson's fascia at the root of the neck.

These three surfaces, so far as movements of the chest wall are concerned, are relatively stationary. The two surfaces of the lung which are directly expanded are the diaphragmatic and ventro-lateral or sterno-costal; these surfaces are the first to expand on inspiration, and it is only a residue of the expanding force which is left at the disposal of the more stationary surfaces. When one further considers that the lungs of young children are still lobulated and contain a considerable amount of connective tissue between the expanding areas, it will be seen, as I pointed out some years ago, that the expanding force of inspiration is spent to a considerable extent on tissue of little extensibility. There is thus in children an additional claim on the residual expanding force at the disposal of

the stationary surfaces of the lungs after expansion of ventro-lateral and diaphragmatic surfaces.

If these are the conditions in normal respiration, how are they modified if the ribs are soft? It is a well-recognized fact that the rickety deformity manifests itself most in those parts exposed to mechanical strain. The mechanical strain produces a deformity in the first place, and in the second place excites further rachitic softening by its irritation, thus producing for a time a vicious cycle of events. The thoracic distortion is characterized by an in-sinking of the chest wall in the upper part of the ventro-lateral region. Owing to the softening of the ribs, the intrathoracic negative pressure has been able to prevent the expansion of the chest wall over the area of direct expansion. The consequence is that the only area of direct expansion is diaphragmatic, and clinical examinations show that this is really so. In cases of severe rickets the respiratory movements in the upper part of the thorax are scarcely visible, whereas the diaphragmatic contractions are relatively increased, with the result that the abdominal contents are depressed further than in the normal subject.

It must also be obvious that with the depression of the chest wall and the narrowing of the thoracic cavity, the surfaces of indirect expansion become atelectatic. In such cases one finds that the anterior borders of the lungs, as well as the posterior parts lying in the hollow between the vertebral column and the ribs, are collapsed; the centres of the diaphragmatic surfaces of the lower lobes are usually emphysematous, only the narrow margin embedded between the diaphragm and the chest wall being airless.

Thus the pathological variation produced by softening of the ribs bears out Keith's contention as to the mechanism of normal respiration. But in what way does this variation affect the vascular system? The contractions of the diaphragm, which are increased in power and rhythm, exercise such pressure on the abdominal contents as to secure the flow of blood from the venous cistern to the heart. The pressure of collapse of the lung will mean that the negative force, which would otherwise be spent in dilating the infundibuli and alveoli, will be exerted on the vessels, so that the blood can reach the lungs with comparative ease, and it is in the lungs that the serious obstacle presents itself. The pulmonary circulation is secured by three great forces:

1. The driving power of the right ventricle.
2. The suction action of the left auricle.
3. The pumping action of the expanding and collapsing healthy lung.

In the rickety condition under consideration the latter two forces are thrown out of action, so that the whole work of propulsion falls on the right side of the heart.

It cannot be pretended, however, that these considerations of purely mechanical variations by themselves afford a satisfactory explanation of the appearances in the cases detailed above. T. Lewis in his physiological experiments has shown how extremely complicated the relation of respiration to circulation is, and how difficult it is to analyse the factors which come into play under varying circumstances. Mackenzie in his clinical observations shows how in disease the close relationship between cardiac and respiratory rhythm manifests itself; moreover, the fact that both ventricles participate in the hypertrophy in the cases described suggests that part of the strain may be referred to the increased rate of rhythm, and it is not impossible that the increased cardiac rhythm is secondary to the increased respiratory rhythm.

I have recently made two observations which suggest the deeply seated relationship between circulation and respiratory movements. Observing the contraction of the hearts of very young fish with a stereoscopic microscope it was seen that the cardiac beat had a rhythm co-ordinated with the gill movements. In examinations of the lungs of rats and mice it was found that the ordinary striped cardiac muscle is continued on the pulmonary veins as far as the branches of the second and third order. Such muscle is indicative of a direct functional relationship between cardiac contraction and pulmonary function; a relationship which may possibly be maintained in other mammals by nerves. It must be further recognized that the respiratory and circulatory apparatus is dominated by a demand on the part of the tissues for sufficient oxygen to maintain a normal degree of metabolic activity. Haldane, in view of the extremely high respiratory exchange per unit body weight in the mouse, concluded that the pulse-frequency in that animal must be over 500 per minute. Investigating this point by means of the electrocardiogram Dr. F. Buchanan found that the pulse-rate of the mouse varied between 520 and 780 beats per minute, while the respiratory rate varied between 140 and 160 per minute. The ratio of pulse-rate to respiratory rate is thus about the same in the mouse as in man. Now, Pembrey has found that the respiratory exchange in grams CO_2 per kilogram body weight per hour is 8.4 in the mouse, that is, about fourteen times as great as in man, while the heart-rate is about ten times more rapid than in man. Thus, as Dr. Buchanan points out, while in the mouse the respiratory exchange is fourteen times greater than in man, and the pulse only ten times more rapid, it must be remembered that the relative weight of the heart to the body weight is greater in the mouse than in man; that is, the relatively larger heart of the mouse suffices to maintain a relatively greater respiratory exchange, while the ratio of the pulse-rate to the respiratory rate is the same. Dr. Buchanan and Dr. C. G. Douglas have found that in birds there is the same interrelation between respiratory exchange, relative weight of the heart to body weight and pulse-rate. It is likely, then, that in cases of respiratory embarrassment due to atelectasis and distortion of the thoracic wall a dominating influence on the respiratory and pulse rate is the demand for sufficient oxygen to maintain metabolic activity. This demand is met by increased pulse-rate followed by an increase in the size of the heart. Such a consideration explains why the left ventricle is enlarged to some extent as well as the right.

The problem, however, which these cases present is not speculation as to the nature of complicated processes; it is rather to formulate what may be termed a "correlation of end results," and to answer the question, "Does the circulation suffer from diseased lungs or deficient thoracic movement?" Mackenzie emphasizes the importance of examining thoroughly the posterior aspects of the lungs as a guide to prognosis in cardiac disease. Extremely suggestive in this connexion is his statement that "when the right ventricle is enfeebled, the assistance of the respiratory movements becomes necessary. When the patient lies in bed on one side, the pressure of the mattress on the ribs restrains their movement, so that the flow of blood through this part of the lung is retarded, and oedema results. This can be shown in the early stages, for, when the patient breathes deeply, the whole of the crepitations may soon disappear." A correlation of the evidence in these four cases which have been described leads definitely to the conclusion that the hypertrophied heart, with its broad squat and globular shape, is the manifestation of an effort to compensate for loss of accessory forces of circulation normally present in a healthy expanding lung and thoracic wall. Nor are these cases to be regarded as pathological curiosities. The variations present are only exaggerated examples of a condition which is probably the determining factor in the issue of a large proportion of the fatal cases of so-called bronchopneumonia in underfed children who are brought up in the overcrowded districts of industrial centres. In any case, the observation of over 1,000 cases of measles, whooping-cough, and diphtheria has led me to the conclusion that where an intercurrent bronchopneumonia extends over a period of a fortnight, the progress of the case has, as a rule, been complicated by the occurrence of collapse; in the case of non-recovery the patient has succumbed not to the toxic products of the infecting organism, nor to the noxious products of inflammatory decomposition, but to the severe mechanical strain which has been put on the heart. This strain is due to failure of the accessory pumping assistance of normally expanding lungs, and the almost constant occurrence of varying degrees of cardiac hypertrophy in such cases is very strong evidence in support of that contention. Similarly in acute rickets and in subsequent chest deformity there is great liability to collapse of lung tissue, more especially in the event of the occurrence of an intercurrent bronchitis. Such collapse enhances the disability to which the respiratory mechanism is exposed by the presence of soft rachitic ribs or a distorted and narrow thoracic cavity; the double embargo

thus placed on the heart leads to a hypertrophy which can maintain compensation only over a limited period except under the most favourable conditions. The period of childhood and even of adolescence may in cases of chest deformity be occasionally survived without any considerable degree of inconvenience, and the result of excessive cardiac strain may manifest itself first in adult life. Professor Muir has recently shown me the heart of an adult who had a very marked thoracic distortion, and who died with the signs and symptoms of cardiac failure. In this case there was a greatly hypertrophied heart, which exhibited the broad quadrilateral shape described above. Hence, from the examination of cases of pulmonary disease and of distortion of the thoracic wall, there is considerable evidence for the view that healthy lungs and a healthy chest wall are indispensable for the maintenance of an efficient circulation.

HEPATIC DISTOMIASIS (SHEEP ROT) IN MAN.

By GORDON R. WARD, M.R.C.S., L.R.C.P.,
RESIDENT MEDICAL OFFICER, GENERAL HOSPITAL, TUNBRIDGE WELLS.

TRENTLER, in 1793, recorded a case in which he found a parasite protruding from a ruptured vein in a man's leg. Although he gave it the name of *Hexathyridium venarum*, it was in all probability a specimen of *Fasciola (distoma) hepatica*, the liver fluke, and his case the first reported of its occurrence in man. Since that time twenty-three other cases have been described, but some of them are almost certainly not authentic, and have been subjected to very damaging criticism; thirteen or fourteen survive as true examples of what must therefore be regarded as a very rare disease; of these at least four were noted in Great Britain.

Four other species of the *Fasciolidae* are found in man, of which the *Distoma sinense* is the most important, occurring extensively in Japan, China, and India. All these affect the liver primarily. A nearly allied pulmonary parasite (*Distoma westermanii*), responsible for a disorder characterized by cough and haemoptysis, is found in the Far East, cases being sometimes imported into the United States of America. Other forms of distomiasis are due to certain intestinal parasites, and occur mostly in India, while in Egypt especially the *Bilharzia haematobia* is responsible for much chronic ill health.

LIFE-CYCLE OF PARASITE.

The *Fasciola hepatica* is found in the gall bladder and bile ducts of sheep. More rarely it is parasitic in cattle, but in them the disease does not run so acute or fatal a course. The eggs of the adult fluke are conveyed by the bile into the intestine, and so eventually reach the water or damp grass which is essential to their further development. After a time, varying from three or four weeks to as many months, according to the time of year, a ciliated embryo emerges from each egg by pushing of the lid. These embryos are known as miricidia, and soon enter a small snail—*Limnaeus minutus*—there to form sporocysts. Although sporocysts may be formed in closely-allied species, no further development takes place. In the *Limnaeus minutus* each sporocyst produces a large number of rediae, and from these again are formed cercariae, which leave the snail and lead an independent existence. When living in water, they appear to the naked eye as small whitish bodies. They may then encyst themselves on the stems of grasses, and in that condition are capable of surviving extremes of heat or cold, and even desiccation.

The cercaria is that stage in the life-cycle at which the fluke becomes parasitic in mammals, and may be ingested while actually in the snail, in drinking water, or on vegetable foodstuffs. It is probable that drinking water chosen at the dictates rather of necessity than desire, and watercress, sorrel, etc., are responsible for the transmission of the parasite to man.

The cercariae, having reached the digestive tract of man, obtain access to the bile ducts, where they attain adult size—about 30 mm.—deriving the necessary nourishment from the blood of the host, which they imbibe after attaching themselves to the mucous membrane. The ova are then deposited in very large numbers; the fluke dies and becomes encysted, or is excreted.

The discovery of this life cycle dates from the observation that the parasite was never found in sheep whose pastures were contiguous to the sea or to salt marshes. Salt has been found an efficient prophylactic, and is used as such in veterinary practice.

INFECTION IN MAN.

It is obvious that there must be many occasions on which this parasite in the cercaria stage reaches the human alimentary canal, for in many parts of the country much of the drinking water is derived from ponds to which sheep have free access. Yet the disease is rare. This points to the fact that man is by no means an ideal host. It is not unreasonable to suppose that the habit of taking salt with vegetable food has something to do with this, or it may be that his digestive secretions either in their nature or concentration are inimical to the parasite.

The presence of only one or two flukes has been frequently recorded. Murchison's case was that of a man who died after attention in hospital for other reasons. A solitary fluke was found in his liver *post mortem*. On the contrary we find records of more than a thousand parasites in one sheep, and of considerable numbers in man. Perhaps those instances of the finding of only one or two are cases in which a more than usually adaptable fluke has survived in an essentially inimical host; those of the finding of large numbers must, then, be held to signify the loss of resistance on the part of the host towards flukes of no especial virulence.

It is by no means improbable that some instances of this disease have been treated as cirrhosis of the liver or cancer; the means of diagnosis are least available in the remoter country practices where the disorder is most likely to occur.

COURSE OF DISEASE IN MAN.

The *Fasciola hepatica* has been so seldom observed in man that it is not easy to judge of the symptomatology from the recorded cases. A consideration of the disease as it affects sheep, and of the effects of the allied parasite *Distoma sinense* will, however, allow one to arrive at a fair idea of the disease process.

The period of invasion may pass unnoticed clinically, and in the early part the host may gain weight and enjoy a good appetite. There may, however, be slight jaundice and moderate enlargement of the liver. In sheep the minimum duration of this stage is six weeks; in man it is probably longer. Secondly, the stage of anaemia is recognized, and this is supposed to coincide with the maturity of the flukes. Anaemia of the mucous membranes is the most obvious sign, but the symptoms are rather those of toxaemia; in the case about to be considered they were certainly quite disproportionate to the anaemia. Appetite fails or may become depraved, the temperature is irregularly elevated, and the frequency of the pulse increased. Gastric pain and intestinal disorders become evident, diarrhoea and vomiting are not unusual, constipation may be present. The eyes are lustreless and the skin dry; experienced veterinary surgeons have been known to base a diagnosis on the condition of the skin alone.

Slight exertion aggravates the dyspnoea which is present, and the third stage soon appears. This is the stage of emaciation and ascites, and is accompanied by increased anaemia and progressive hepatic derangement. Oedema of the eyelids, conjunctivitis, hydrothorax, bronchitis, ascites, and jaundice are among the common symptoms.

The fourth stage seems to correspond in time with the emigration or excretion of the parasites, and in those who have survived the third is one of slow recovery from toxic symptoms. Fibrosis and other changes in the liver remain, and may cause permanent ill health.

An infinite variety of catastrophes may ensue from the presence of flukes in parts of the body other than the liver. These migrations are by no means uncommon; 10 per cent. of all cattle affected are found to have flukes in the lungs, and in the human being they have been seen even in the eye. One case was that of a child, 2 months old, who had an abscess of the scalp, which contained liver flukes; in another they were found in the sole of the

foot. There seems no reason why any intermediate region of the body should not be affected. Abscess of the lung and general peritonitis are among the possible causes of death in this disease.

MORBID ANATOMY OF DISTOMIASIS.

The chief changes are those in the liver, which will therefore be described first. The calibre of the ducts is increased considerably, and the walls show a proliferation of the epithelium, forming small papillomata. Outside the ducts is an area of inflammation and an accumulation of eosinophile cells, generally very marked, according to Brumpt. In later stages fibrosis is extreme, and calcification may occur. A case is on record of a calcified cyst the size of a hen's egg containing about half a dozen flukes. The inflammation spreads to the surrounding hepatic substance, and in the presence of pyogenic organisms pus formation naturally results. The liver as a whole may show extensive perihepatitis, and cysts may be seen protruding on the surface. Where these have leaked adhesions will be found. The cirrhosis may reach a very marked degree.

In the same way the presence of flukes in other parts of the body is followed by inflammation, eosinophile infiltration, and either fibrosis or abscess formation. The other morbid appearances are those found in cases of severe anaemia, and those proper to wasting diseases. They call for no particular mention; the digestive system may show little abnormal or may be the site of extreme catarrh or even ulceration.

REPORT OF A CASE.

E. D., male, aged 31, was admitted to the Tunbridge Wells General Hospital on November 10th, 1910, under the care of Dr. L. Adeney, by whose kind permission I made the investigations detailed below, and now record the case.

Dr. Adeney had seen the patient before admission in consultation with Dr. Bayfield, of Southborough. A provisional diagnosis of tuberculous peritonitis had been made, but he was admitted for the further investigation. He gave a somewhat indefinite history of about three months' failing health with intermittent "indigestion." There had been no outstanding or striking symptoms of any sort, but an increasing inability to do his work—that of a barber—had caused him to seek medical advice.

At the time of admission the following points were noted. He was a small, slight man of delicate appearance; eyes a little prominent; thyroid normal; skin dry, slight yellow tinge; conjunctivae anaemic, slight but distinct; subcutaneous fat ill developed; heart sounds distant; pulse small volume, increased frequency, tension poor; abdomen slightly distended; some epigastric tenderness; no pain at time of examination; liver not enlarged; spleen not enlarged; no "doughiness"; no signs of tuberculous foci in lungs or elsewhere. Complains of weakness, occasional headache, and abdominal pain mostly after meals. Is "very glad to get to bed." Previous illnesses *nil*. Family history good.

It may be mentioned that he weighed only 6 st. 8 lb. a month later.

A few days' observation showed that his pulse-rate and temperature were persistently and synchronously elevated towards evening. The temperature fell to normal during the day, but the pulse remained above 100. The respirations averaged 24; this number fell to 20 during convalescence. These variations and the return to normal under treatment are well shown by the accompanying chart.

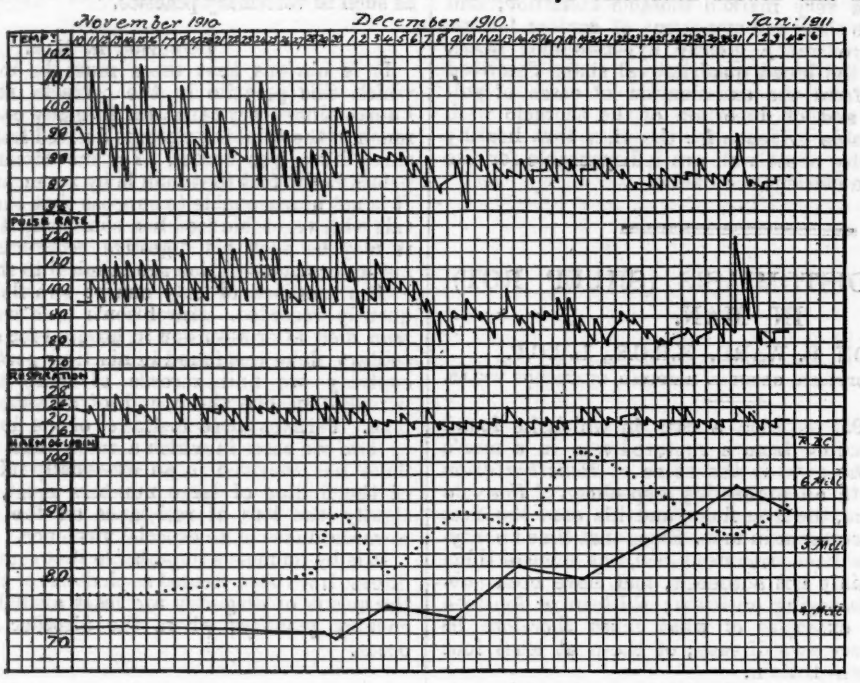


Chart showing variations in pulse-rate, temperature, and respiration, and condition of blood.

A blood examination was made in the hope that it might throw some light on the condition. It did—in an unexpected fashion. On November 14th there were 37.2 per cent. of eosinophile leucocytes and 3,757 per cubic centimetre, as against a normal of 1 to 2 per cent. in adults, with a total of 150 to 250 per cubic millimetre. This increase was so marked that an explanation was immediately sought for. Two frequent causes—namely, asthma and skin diseases—were readily excluded, but it was elicited that the patient had suffered from threadworms. The resulting pruritus ani had, however, been absent for more than nine months; nevertheless it was thought advisable to give him anthelmintics for a time. Santonin and calomel, of each 2 grains, were therefore administered nightly. After fourteen days his blood was again examined, and showed 41·6 per cent. of eosinophiles, with a total of 6,157 per cubic centimetre. The faeces were therefore examined, and the ova of *Distoma hepaticum* found in considerable numbers—four or five in each preparation.

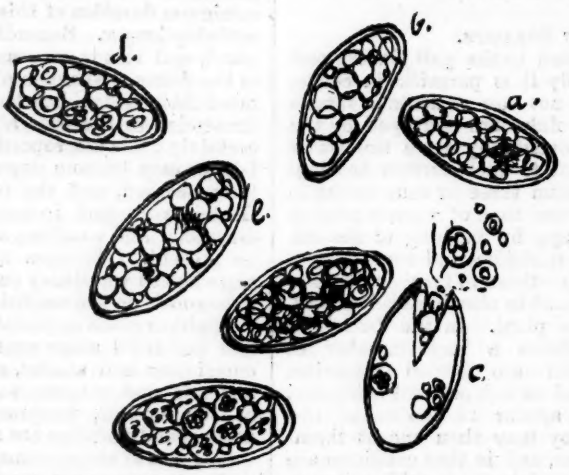


Fig. 1.—Ova of *Distoma hepaticum*. *a*, Showing position of germ area; *b*, showing asymmetrical form; *c*, artificially broken, with yolk granules pressed out; *d*, with lid missing but yolk present; *e*, typical form. (Drawn by Author from the preparation.)

Although the general condition of the patient was improving the haemoglobin was still little above 70 per cent., that is, had not altered since admission. The red blood corpuscles, on the contrary, were above the generally accepted normal of 5,000,000 per c.mm. There can, however, be no doubt that this figure is too low, at least in country districts.

The possibility that tuberculosis might be present as a complication of the distomiasis was considered, but the cutireaction was negative and an injection of $\frac{1}{10000}$ tuberculin K.R. gave rise to no general reaction. There was a little soreness locally. It did give rise, however, to a remarkable increase in circulating eosinophile leucocytes, which rose to 9,003 per c.mm., a figure not previously nor thereafter recorded in this case. A reference to the table will show the actual differential count. This eosinophile leucocytosis following tuberculin injections has been noted by several authors. Grawitz found as many as 41,000 per c.mm. in one case.

By the second week in December the patient's condition had much improved, and except for some flatulence he appeared to be in normal health. On December 18th and 19th he had sharp pain on the right side at about the level of the ninth rib in the mid-axillary line. It disappeared on December 20th and did

Table showing Absolute Number of Cells per Cubic Millimetre.

Date.	Red Blood Corpuscles, per c.mm.	Haemoglobin, per Cent.	White Blood Corpuscles, per c.mm.	Polymorphonuclears.	Eosinophiles.	Mast Cells.	Transitional Leucocytes.	Lymphocytes.	Large mononuclears.
Nov. 14 ...	4,430,000	73	10,100	3,373	3,757	20	606	1,879	465
Nov. 28 ...	4,700,000	72	14,800	5,150	6,157	118	296	2,871	207
Nov. 28* ...									
Nov. 29 ...	5,350,000	72	16,930	3,826	9,007	106	339	3,251	406
Nov. 30 ...	5,650,000	71	11,160	2,902	5,826	112	223	1,964	134
Dec. 4 ...	4,750,000	76	15,000	4,710	6,660	120	600	2,580	330
Dec. 9 ...	5,650,000	74	10,400	3,120	3,578	125	437	2,766	374
Dec. 9† ...									
Dec. 14 ...	5,400,000	82	12,300	3,567	6,199	221	541	1,378	394
Dec. 19 ...	6,512 000	80	12,400	3,745	5,010	149	422	2,579	496
Dec. 31 ...	5,340,000	94	10,900	6,380	2,310	43	286	1,760	110
Jan. 4 ...	5,640,000	90	11,450	2,830	4,876	114	368	3,165	207
Normal ...	5,000,000	90—100	8–10,000	6–8,000	150—250	50	3–500	1,500—2,500	2–400

* Injection of tuberculin.
† Arsenic and iron discontinued. Administration of euonymin commenced.

not recur while he was in hospital, but was present again about fourteen days after his discharge. This may have been due to some localized perihepatitis, but there was no direct proof.

In spite of the improved health the number of ova in the faeces did not diminish, so that we cannot suppose that the flukes were affected. This was hardly to be expected, and it was on the whole gratifying that his health had improved so much.

There are several points of interest about this disease, which is commonly known as distomiasis. This term, however, will include any disease caused by flukes, even that due to bilharzia. Hepatic distomiasis is more accurate, and includes only disorders which much resemble each other, although caused by different species of fluke. The veterinary colloquialism, namely, "sheep rot," is a graphic description of the disease in sheep, but lacks elegance, and can hardly be adapted to meet the case in medical nomenclature.

Etiology.

This has been in part discussed already. Briefly, there must first be the ingestion of cercariae, and it appears that the encysted form on vegetables is most often eaten. There must, then, be a sufficient concentration of alimentary secretions to dissolve the cyst. Evidence points to the gastric juice as the most important secretion from this point of view. The cyst wall being digested, there must further be an absence of any substance—for example, salt—which is fatal to the parasites. If these conditions are fulfilled the cercariae are probably able to reach the blood vessels and even the bile ducts. Their continued development depends on an adequate food supply of a proper nature. The normal food is the blood of the host. Weinberg has shown that this produces antibodies, presumably toxic to the parasite, but perhaps only of a nature to neutralize its toxin. Previous debilitating conditions or —as in the case recorded—general under development might impair the production of these antibodies, and so favour the growth of the cercariae, or, on the contrary, the parasite may become habituated to them. Probably both processes occur, and decide together the growth or death of the parasites.

Diagnosis.

The diagnosis rests on five points—namely, the discovery of the ova in the faeces, or of the parasites in any situation, the clinical signs, the eosinophile leucocytosis, and the precipitin reaction. The eggs are invariably present in all but the mildest cases and the earliest stages. The discovery of actual flukes is unusual, but has called attention to some of the recorded cases. The clinical signs and symptoms are not likely to lead to a diagnosis in this country owing to the infrequent occurrence of the disease, but are of the first importance in veterinary surgery. The presence of eosinophile leucocytosis has not been recorded in any other case, but the local eosinophile infiltration noted by Brumpt is presumptive evidence of its general appearance. The precipitin reaction, as acknowledged by Weinberg himself, is of theoretical rather than practical importance. The modern extension of facilities for investigations in clinical pathology may be expected to make the discovery of the ova the most important diagnostic point, as it is now almost the only absolute one.

Prognosis.

The prognosis can hardly be regarded as favourable in view of the migrations in the body of the parasite and the changes produced in the liver. The onset, too, is insidious and much harm may be done before medical advice is sought. Moreover, it is at least possible that only weakly persons are the subject of the disease except in its mildest form. On the other hand, if the infection is not extensive, and if the patient is in a position to procure good food and good hygienic conditions, it should be possible to prevent reinfection and compensate for any damage already done. The subject of this paper had two symptoms which made one particularly cautious in the prognosis, namely, a large number of ova and pain over the liver; the persistence of the latter, even when his general condition was excellent, was considered distinctly unfavourable as probably pointing to some hepatic derangement, of which the ultimate consequences might easily prove fatal.

Treatment.

Treatment with anthelmintics is of no value, since they are not excreted in the bile and so cannot reach the parasites: moreover, any drug that was excreted in the bile in sufficient quantities to kill the fluke would probably kill the host as well. As a matter of fact, we do not know of any drug which is secreted in the bile or circulates in the blood in sufficient concentration to act as a vermicide. Quinine is certainly a protoplasmic poison, and exists in the blood as such, and the same is true of arsenic; but these do not seem to have any effect on blood-sucking parasites. It was therefore resolved in this case to endeavour to stimulate the secretion of bile, with the idea that toxic substances should be washed out and their absorption perhaps prevented. For this purpose euonymin was given three times a day in pills containing 1 grain. A marked rise in haemoglobin certainly took place under this treatment, but it cannot be asserted that this was due to the comparatively small doses of euonymin and not to rest and improved hygiene.

Symptomatic treatment follows the usual lines, and even surgical treatment may have to be invoked.

Prophylactic treatment is hardly called for in man, but consists of the administration of common salt with any food likely to be affected.

The Migration of the Flukes in the Body of the Host.

Adult flukes have been found encysted in the lungs, and even in the subcutaneous tissues. It seems hardly credible that an adult fluke could pass in that state through the heart and large vessels. It must therefore be assumed

that the cercariae reach the blood stream, in which case this parasite has almost as much right to the appellation "haemato-bia" as has the bilharzia, its near relative. If the presence of flukes in unusual situations be due to migrations of their immature forms (the cercaria), it follows that such migrations will take place at a fairly definite period of the disease, at or shortly after the time of invasion. This is important from the prognostic point of view, for in the absence of reinfection we ought to be able to say that after a month or so the damage will be confined to those positions which the flukes then inhabit. It will also appear that the tendency of the organism is to encyst the parasite and thus limit its activities. Virtually sepsis is then the only danger to be feared except in rare instances, and apart from structural changes in the liver. There is the further question as to the way in which the cercariae obtain entry into the vessels. Since they can, it seems, survive in the stomach and duodenum, there is no obvious reason why they should not penetrate the mucosa, and reach the vessels in those organs. They would thus obtain access to the liver. Further, it requires some degree of imagination to suppose that as many as a thousand cercariae may unanimously choose the bile duct as a suitable path in life. It is true that larger worms are not very infrequently found in the duct. Sick collected 64 cases of *Ascaris lumbricoides* in that situation, but the invasion of some hundreds of parasites by this route is a very different matter. On the other hand, we have the undoubted fact that the flukes are found in the bile ducts; this may be explained by supposing that they reach the ultimate ramifications of the canaliculi directly from the smallest portal capillaries—a supposition which appears by no means improbable. It may be mentioned, in support of the view that the gastric mucosa is primarily affected, that there is a case on record of a French army officer who ate some meat infected with an allied parasite (*Distomatose bucco-pharyngée*). The parasites immediately fixed on the walls of the pharynx and mouth in such numbers that he was in danger of suffocation. In the same way, it may be, the *Distoma hepaticum* fixes on the mucosa of stomach and duodenum—probably, indeed, on that of other parts of intestine.

The alternative view has never been proved experimentally, and rests on pure conjecture. It is somewhat difficult to explain, except on the first hypothesis, why the pancreas is not also invaded, since its secretion does not appear to be lethal to the parasites and the road is open. If they do, indeed, traverse the common duct, why should they all take one turning? The presence of larger worms in the gall bladder and not in the pancreas is explained by the lack of space in the latter situation, but surely there is room for a few cercariae.

THE ANAEMIA.

In the case under consideration the anaemia had not reached any great degree, and there are no available records of other cases. It is obvious that it depends on the presence of the parasites in some way, and therefore comes into the great clinical group of parasitic anaemias. It further resembles some of these in the fact that slight loss of blood is an aggravating factor. It is further very probable that sepsis may be a further intensifying agent, but neither this nor the haemorrhage are likely to be sufficient in degree to cause any great disturbance.

The eosinophile leucocytosis, the elevation of temperature, and the increased pulse-rate suggest the presence of some toxic substance absorbed into the general circulation. The fact that antibodies can be demonstrated in the blood is further evidence. The question then arises whether this toxic material is derived from the living or dead fluke, from its secretions or excretions.

It would be convenient to suppose that it arose from dead or decomposing parasites, for this will explain its absence in some cases (which one may suggest from analogy with the case of *Distoma sinense*) and in the early stages. A similar suggestion has been put forward to account for the varying occurrence of anaemia in *Bothriocephalus* infection, but although there is some direct evidence in that case there is none with regard to distomiasis. This view is also negatived by the presence of eosinophilia around living parasites.

In favour of the origin of the toxin from the secretions of the parasites is the isolation of such substances from various intestinal parasites. The latter, however, were not only certainly dead, but desiccated when the extracts were made, and, moreover, the results of these experiments have not always been verified by subsequent observers. Another suggestion, made in the case of ankylostoma, is that the excreta collect in large masses in the intestine and give rise to the toxaemia. There is a certain amount of inherent probability about this view, and it would apply with more force when the excretions are deposited in the bile capillaries where there is little pressure to remove them.

Whatever the precise source of the toxin there can be little doubt, though its nature is quite unknown, that it is the most important agent in the causation of the anaemia.

The type of anaemia etiologically comes under Hunter's heading of "Septic Anaemias," which presumably includes all anaemias due to the products of organisms foreign to the body. In the absence of a promised volume by the author mentioned, Part II of his "Severest Anaemias," as yet unpublished, the above classification is made with all reserve. Haematologically the anaemia is distinctly of a "chlorotic" type. The following data are derived from ten blood examinations carried out in this case:

1. The number of red blood corpuscles was never below 4,430,000 per c.mm., and under treatment with iron and arsenic rapidly rose to normal. Within fourteen days it had reached 5,350,000, and later a maximum of 6,512,000 was recorded. A fairly constant average of 5,500,000 was established after a fortnight.
2. The haemoglobin remained practically constant at 70 to 75 per cent. for a month, and then rose but slowly, never reaching above 94 per cent. during the period of observation. It did not commence to rise until iron and arsenic had been replaced by euonymin.
3. The size of individual corpuscles was at first below normal—namely, 6.93μ; at the last examination it was 7.23μ. At first 62 per cent. were between 7μ and 8μ; finally as many as 89 per cent. fell between these limits. There was thus a distinct improvement in both respects.
4. Poikilocytosis was never well marked, and varied but little.
5. Polychromasia was present throughout, but was slight.
6. Basophile granulation was also present throughout and was very considerable in degree, even at the last examination.
7. The viscosity of the blood was very obviously diminished at first, and even when the corpuscles were 6,512,000 per c.mm. did not seem to be increased.
8. The leucocytosis, which reached 16,930 per c.mm. on one occasion, was due to an increase of eosinophiles; the other cells were present in normal numbers. The mast cells, however, reached 1.8 per cent. on one occasion—absolute number 221 per c.mm.

The absence of pigmentation, urobilinuria, or of any of those forms of red blood corpuscles which appear after extensive blood destruction, sufficiently attests that this is not a "haemolytic" anaemia. The increased fluidity of the blood, the quick rise of red blood corpuscles and its variable extent, the increase of total blood volume known to occur in ankylostoma anaemia, and the close resemblance to chlorosis shown in the size, etc., of the corpuscles, lead one to suggest that there may be some degree of hydraemia in these cases. This is not, however, a certainly trustworthy deduction; indeed, all deductions drawn from one case only are to be accepted with caution. Moreover, if the anaemia depended solely on dilution of the blood, the haemoglobin percentage ought to rise at the same rate as the percentage of red blood corpuscles. This was not the case, and we may therefore feel certain that there is in this anaemia some perversion of the normal process of forming red cells. Apparently this is shown first by a deficiency of haemoglobin, and in the size and contour of the cells. Later there would be an actual diminution in output of cells, and the qualitative changes would become more marked. It is hard to avoid the conclusion that this is due to some poison circulating in the blood and so reaching the marrow. The polychromasia and stippling may both be due to the same influence, but it is more probable that they have different significances.

Polychromasia is too vexed a subject to discuss here; but if it be regarded as an infallible sign of the extension of blood formation, it is difficult to understand why it persisted in this case long after the blood was normal, and in the absence of any drug which is known to affect the marrow. As regards the basophile granulation, bearing in mind its immediate appearance after small doses of metallic toxins, the author inclines

very much to the view that it represents some adverse effect produced on the red corpuscles while they are actually in the circulation. It will be noted that this granulation showed no signs of diminishing at any time, which accords with the probability that the formation of toxin by the parasites was equally undiminished.

To summarize, the anaemia resembled very closely that ordinarily accompanying chlorosis and showed no signs of being due to haemorrhage. It may be classed as a septic or, better, toxic anaemia, the essential haemolytic lesion being probably aplasia of the marrow.

The eosinophile leucocytosis is interesting and certainly depends on the need for such cells in the immediate vicinity of the parasites. Their presence in such situations has been noted in this and many other allied parasitic diseases, notably trichiniasis.

It has been observed also that when the parasite is well encysted or calcified the eosinophilia disappears. Eosinophile cells have never been regarded as phagocytic in the same way as polymorphs. Is it not very probable that they are chemical phagocytes—that is, neutralize or destroy adverse chemical substances—among which the toxins of parasites may well have a place? It is also at least credible that this power resides in the granules. It has been observed that in the exudate from tick bites in the horse, in which animal the eosinophile granules are particularly large, cells are found in which only one or two granules remain. This may well point to the fact that the rest have been used up and have ceased to be demonstrable by ordinary staining methods.

Now if the output of eosinophile cells was adequate, the toxin would presumably be neutralized before it could do harm, and the anaemia would not occur, and such cases would not seek medical treatment. If at the same time the parasites were speedily so surrounded by impermeable tissue that the toxin did not reach the circulation, there would be no further stimulus to eosinophile leucocytosis. On this hypothesis may be explained the absence of this sign in many cases of infection by parasites which usually give rise to it. On the other hand, the toxaemia might be so intense that eosinophile production was paralysed or exhausted. Eosinophile leucocytosis is, in fact, on a par with polymorphonuclear leucocytosis, which is absent in cases of walled-off abscess and in pneumonias without reaction. The one is excited by the toxins of bacteria, drugs, etc, the other by those of parasites in many cases. The apparent anomalies in the occurrence of eosinophilia are due not to erratic natural laws, but to a lack of information as to the formation and absorption of the toxins which call it into existence.

THE OVA.

The eggs are oval in shape, as a rule; not infrequently the greatest diameter is midway between the two poles, but is, as a rule, towards one end. They are sometimes asymmetrical, as seen under the microscope, and this, perhaps, is due to their lying on one side. The proportion of length to breadth varies very considerably. Measurements of a large number gave an average length of 137 μ, with an average breadth of 71.7 μ. This is twice as large as the egg of *Bothriocephalus latus*, which in some ways resembles that of *Distoma hepaticum*. The maximum length was 156 μ, the minimum 118 μ, the maximum breadth 91 μ, the minimum 62 μ.

The colour of the egg varies from a light yellow to dark brown, they stain very deeply with iodine, but hardly at all with aniline dyes.

At one end of the egg is a cap or lid from 30–40 μ in diameter. This is not always very obvious; it may sometimes be demonstrated by tapping the cover-glass, but this usually cracks the egg in some other place. Within the egg are a number of spherical bodies known as the yolk granules. Some of these are 20–30 μ in diameter, and possess smaller granules in their interior, the latter arranged in a rosette. The smallest yolk granules measure 4–6 μ, and appear to consist of two concentric spheres. Both varieties stain slightly with methylene blue, and appear to rest in a nearly homogeneous material, which fills the egg. Towards one end is an area known as the germ area; by the division of its cells the miricidium is formed. The yolk granules disappear, and are said to provide nourishment for the growing embryo. Their comparatively elaborate structure is worthy of note. No stage beyond that of the faint appearance of a germ area is seen in the faeces except after incubation, which may be carried out in an incubator in winter, or without in summer. It may be months before the miricidia develop. The writer has not been able to see it, although the ova have changed a good deal in colour and even lost their lids.

A résumé of bibliography is given in the following:

R. Leuckart: *Die menschl. Parasit.*, vol. ii. R. Blanchard, *Traité de zoolog. med.*, vol. i. E. Brumpt, *Précis de parasitologie*, 1910. T. S. Cobbold, *Parasites*, 1879.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AN EPIDEMIC OF INFECTIOUS JAUNDICE.

AN epidemic of jaundice has been under my observation for over three months in a village of 300 inhabitants. A brook running through the place receives some sewage from kitchens, but there are no closets emptying into it. The soil is a mixture of clay and gravel. The first case that came under my notice was in the middle of November last year, and there have been some 25 cases since, and fresh cases still crop up. The ages of patients vary from 2 years to—in one case—60 years, and when one member of a family is affected almost invariably the other children in the house contract the disease in a week. The schoolmistress, aged 18 years, was ill in January. The symptoms were much the same in all, though the temperature varied a little; there was yellow staining all over the skin and conjunctivæ, the urine was dark with bile, the stools of the usual clay-like appearance, and there was constipation, sickness and general malaise, inability to take food, particularly fatty substances, rise of temperature, constant pain over the liver, headache, and loss of flesh and muscular strength. The treatment consisted in keeping the patients warm in bed, light food, and magnesia and cascara as medicine. So far they have all recovered.

The cases are not entirely limited to the village described, for recently in my own village, which is three miles distant, there has been an outbreak in a family. The first patient was a girl aged 8, who had consorted with children from the village first infected, and subsequently two small children in the same family fell ill. Can all these cases be an instance of an outbreak of the febrile and infective jaundice recorded by Weil of Heidelberg in 1886, and described under the title of Weil's disease in Allbutt and Rolleston's *System of Medicine*?

T. F. VAISEY,
Medical Officer of Health, Winslow.
Winslow.

CONTINUOUS ANTISEPTIC INHALATION IN PULMONARY CONSUMPTION.

DR. PEREIRA has spoken of giving a patient a respirator saturated with an antiseptic. If 4 or 6 drops are put in the respirator every hour or two, it is not saturated. A woman, 30 years old, has been under my care since February, 1908. From that time till December, 1909, she suffered from cough, profuse expectoration, night sweats, diarrhoea, and three attacks of haemoptysis, one of which nearly proved fatal. The emaciation was extreme. We expected an early termination; as the friends said, "It would be a happy release." During this time (almost two years) I had relieved her symptoms as they occurred with medicine. In December, 1909, I saw a paper by Dr. David Lees in the JOURNAL. I applied the treatment as he recommends it; the effect has been remarkable. She has not required a dose of medicine in 1910. Cough was relieved, sputum diminished, there has been no attack of haemoptysis. General condition so much improved that she can bear to be taken out considerable distances in a chair without fatigue. She has taken sufficient antiseptic solution during these fifteen months to have either poisoned or bled her to death, that is, if the treatment properly used can have such deleterious effects. I have treated several cases in the slums of the town, and they have invariably been much relieved. Sufficient time has not elapsed to pronounce them cured, but they are all in a fair way of recovery.

W. J. HODGSON, M.D.
Rochdale.

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS AND ASYLUMS OF THE BRITISH EMPIRE.

NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL.

A CASE OF RETENTION OF URINE.

(By GEORGE W. BURY, M.B., Ch.B.Vict., Resident Surgical Officer.)

THE following case is reported on account (*a*) of the extremely large quantity of urine retained in the bladder without rupture; (*b*) of the rapid recovery of vesical tonus after such an enormous distension.

The patient, a woman aged 37, was admitted with a history of having been apparently quite well until fourteen days previously. She then complained of severe dragging pains in the lower part of the abdomen, accompanied by nausea and vomiting. She also had some difficulty of micturition, but passed a normal quantity. She recovered in twenty four hours, and was able to do housework. Eleven days later the pain recurred and was very severe, and she had great difficulty in passing urine, and only passed a very small quantity. She also noticed that the abdomen was getting larger, and on this account called in a medical man, who ordered her to hospital.

State on Admission.—She was in a comatose condition; pupils contracted, equal, and react to light. She moved slightly on being spoken to loudly, but did not understand, and was very irritable on being moved. Breath very offensive, skin cold and clammy, pulse feeble and thready, rate 138 temperature subnormal, respirations shallow and sighing. A large tumour was seen completely filling the hypogastric and umbilical areas, but rather more prominent on the right side. Its limits were well defined, and arose from the pelvis. It was hard on palpation. The upper level lay midway between umbilicus and sternum, 1½ in. to right of the middle line. It was slightly movable, but no fluid thrill was obtained. It was dull to percussion, but the flanks of the abdomen and side of the pelvis were quite resonant. The vagina was lax owing to an old unrepaired ruptured perineum. The arch of the pubis was distinctly felt, no bladder seeming to intervene. First within reach of the finger was a mass pressing anteriorly which felt like a soft cervix. The vaginal vault was capacious, and occupying the pouch of Douglas was a hard mass with definite limits and probably connected with the uterus. On examination *per rectum* a large tumour, hard but resilient and slightly movable, was found lying about 2 in. from the sphincter in the hollow of the sacrum. It was possible to feel the sacral promontory above the tumour, which was completely incarcerated in the pelvis and was regarded as probably a retroflexed gravid uterus. This tumour was quite distinct from the abdominal tumour.

Progress.—A catheter was passed with difficulty through a lengthened urethra, and a stream of urine began to flow under very high pressure and 166 oz. were withdrawn. It was quite clear and not offensive; specific gravity 1030, acid, no albumen, sugar, or pus. On examining the abdomen again the original tumour was found to have quite disappeared. An attempt was then made to reduce the pelvic tumour, but it was found impossible. An anaesthetic was then administered, and with two fingers in the rectum the uterus was replaced above the promontory, so that it lay at the level of the umbilicus. A Smith-Hodge pessary was inserted.

The uraemia was now treated by saline infusion, injection of digitalin, calomel, and warmth applied to the skin. A catheter was passed four-hourly, and at the first passage 56 oz. of urine were withdrawn. The general condition gradually improved, the bowels acted, the patient perspiring freely, and consciousness returning though some delirium was present.

Result.—Forty-eight hours after admission she passed urine normally and became quite conscious. On examination of the abdomen a small pregnant uterus was palpable at the level of the umbilicus. Nothing else abnormal. Seven days after admission the patient was out of bed, feeling quite well, and wearing the Hodge pessary, which kept the uterus in normal position. She had no trouble or difficulty with micturition, and the urine was normal in quantity and in every other way. She was discharged quite cured fourteen days after admission, and advised to wear the pessary for at least two months.

I beg to thank Dr. Hatton for supervising the notes of this interesting case and allowing me to publish the same.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

METROPOLITAN COUNTIES BRANCH: KENSINGTON DIVISION.

Arterio sclerosis.

A MEETING of the Kensington Division was held at the Kensington Town Hall on Friday, March 10th, at 4.30 p.m., Dr BUTTAR in the chair.

Sir CLIFFORD ALLBUTT, M.D., read a paper on arterio-sclerosis, the first part of which was published in the JOURNAL of April 15th (p. 853), and which is continued on p 922 of this issue.

The CHAIRMAN very briefly expressed his gratitude to Sir Clifford Allbutt for his illuminating address, remarking that he felt his own position to be a peculiar one, inasmuch as some years ago he had read a thesis before Sir Clifford on the same subject, his knowledge at that time being almost entirely derived from a study of Huchard's work. To-day he had added much to his knowledge of the subject.

Dr. BATTY SHAW said Sir Clifford Allbutt's knowledge of this subject was so thorough that he had some feeling of diffidence in offering any criticism. However, he felt that it might be helpful if the younger generation were to offer suggestions and criticisms from which some solutions of still unsolved problems might be discerned. He wished to speak of his own ideas in this connexion, ideas which appeared to be new, but which were in part not so, since they had been formulated in a different shape many years ago, and had been forgotten. Sir Clifford Allbutt had pointed out the necessity of an association between the clinician and the pathologist. He had followed up the clinical work closely during some years, and had attempted to control his pathological and experimental studies in this manner. In all he had been able to study very close on 1,000 *post-mortem* cases. Of these 1,000 cases, there were 29 in which hypertension had been recorded during life by the sphygmomanometer. He raised the question, what was the meaning of this hypertension? In the 29 cases it was permanent—that was to say, it persisted in all the cases save in the period immediately prior to death. After referring to the associated changes found *post mortem*, such as pontine haemorrhage and capsular haemorrhage, he stated that when examined carefully by the microscope, changes were found in all cases in the kidneys. These changes were partly glomerular and were partly those which Sir Clifford Allbutt had referred to as the "Granular Kidney." Some of the clinicians suggested that if the other organs were examined with as minute care as the kidneys were examined under the microscope, similar changes would be found. This was not the case. The damage was limited in a very large proportion of the cases to the kidneys. His explanation of this occurrence was that the kidneys did not initiate the disease. The glomeruli became altered as a result of the action of a circulating poison. This poison loosened the renal cells, thereby liberating a pressor body. He believed that the poison belonged to the group of hypothetical bodies spoken of as nephrolysins. He admitted that kidney cells had never been recognized in the blood, but there was no reason to doubt the possibility of a nephrolytic poison on this account. Chemical elements derived from disintegrated cells were fixed very quickly by other tissues of the body. He compared this action to the well-known action of the tissues on haemolytic amboceptors. The cells, notably those of the brain, were known to exert a power of abstracting these haemolytic substances with great rapidity. He therefore concluded that the kidney-cell derivatives were rapidly and completely attached to other cells of the body. Dr. Batty Shaw then turned his attention to the clinical manifestations of these cases. He stated that there were always some changes in the kidneys. There was, he pointed out, great difficulty in differentiating between the various classes of clinical albuminuria, and the most extreme sclerosis of the kidney might exist without albuminuria. He firmly held that in cases of hypertension, with or without arterio-sclerosis, some renal

changes were always present. More than this, he believed that when once arterio sclerosis was well established, it might be accepted that if hypertension was not then present it had been at some anterior date. With regard to what is spoken of as arterio sclerosis, however, a real difficulty occurred. He acknowledged the great authority of Sir Clifford Allbutt, and readily accepted his views on the clinical varieties of these conditions, but what did he mean by arterio-sclerosis? On the reply to this question everything depended. Even Dr. Mott and Professor Jores found difficulty in defining what was implied. He himself would include under the term "arterio-sclerosis" several conditions of damage to the arterioles and arteries. But the clinical use of the term could only help to confuse matters, and he therefore suggested that it should be got rid of altogether, and that other terms should be substituted which would describe the actual clinical manifestation. For instance, it would be far better to record a tortuosity of the radial artery or some other abnormality, than to speak of arterio-sclerosis, when all the physician had made out was tortuosity or hardness of the vessel.

Dr. C. O. HAWTHORNE, after expressing appreciation of Sir Clifford Allbutt's address, remarked that much confusion existed in connexion with the subject of arterio-sclerosis because of the want of a clear and unvarying definition of the term. Some pathologists, for example, defined arterio-sclerosis as identical with a special series of histological changes, while there were physicians who limited the word to structural alterations in the arterioles, and who excluded from it abnormal conditions of the large and medium-sized vessels. According to either of these views, therefore, there might be manifest hardening of such arteries as the brachials or radials, and yet no arterio-sclerosis; on the other hand, by many, the use of this term was general for all cases of arterial hardening. Hence discussions on the subject were apt to be confused and unfruitful. Dr. Batty Shaw had anticipated him in the suggestion that as a clinical phrase the term "arterio-sclerosis" should be altogether abandoned. There was another reason in favour of such a course—namely, that whether rightly or wrongly, sclerosis had come to mean fibrosis. But surely an artery might be hard and resistant to the finger not from fibrosis but from contraction or hypertrophy of its muscular coat; and this possibility was likely to be overlooked when arterio-sclerosis was used as synonymous with such a phrase as undue arterial resistance or hardening. To him it seemed sufficient to state the facts—to say that the wall of the brachial or radial artery was unduly firm, while at the same time an attempt might be made to indicate the degree of this by such terms as +1, +2, etc., in the same way as these signs were used to express the degree of hardening of an unduly tense eyeball. If, in addition, the arteries displayed visible pulsation, had a tortuous course, or showed nodules as of mineral deposit in their walls, let these facts be stated by the clinician, and let the term "arterio-sclerosis," if it had any value, be left to the pathologist. He ventured to think that, in existing circumstances, the phrase "blood pressure" might be treated in much the same manner. As used nowadays, all that it meant was a figure or record of the amount of pressure necessary to apply by means of the sphygmomanometer in order to overcome the pulsations of the brachial artery. But to effect this end it was necessary not only to overcome the pressure of the blood but also the resistance of the arterial wall, and while this resistance might be negligible in the case of a normal artery it was by no means certain that the same was true of a thickened or hardened artery. Therefore it was not proved that the sphygmomanometer figure, in a case of arterial thickening, was a true index of the blood pressure; and at the best this figure gave no information in reference to the maintenance of the pressure or to the manner of the pressure decline. The clinical fact was a certain sphygmomanometric reading; whether this indicated the height or level of the blood pressure was a matter of inference or opinion. It was the statement of the fact, not of the opinion, which was necessary to secure accuracy. If, therefore, he was permitted to speak of arterial resistance or hardening instead of arterio-sclerosis, and of sphygmomanometric levels instead of blood pressure, he should say that Sir Clifford Allbutt's teaching in reference to arterial and renal changes offered itself as welcome and helpful guidance in a very complicated question. Personally, he was satisfied that there were cases of arterial disease with relatively low sphygmomanometric readings, the explanation being, presumably, that such disease did not narrow the arterial bed, and consequently did not call for increased cardiac energy. The difficulty was, at times, to distinguish between granular kidney and the condition which Sir Clifford Allbutt named "hyperpiesis." It might be on the safe side as a matter of treatment to regard all cases with high sphygmomanometer readings as cases of kidney disease, but such a course could not, he thought, be justified as clinically accurate.

Professor SCHOTT of Nauheim agreed with Sir Clifford Allbutt that arterio-sclerosis was not a disease, and referred to the results of his experiments with adrenalin. Riva Rocci's sphygmomanometer did not record the blood pressure alone; it also included the capability of the artery to expand and its elasticity. On the other hand, the tonometer did record actual blood pressures. Sir Clifford had referred to what is termed *Schrumpfniere*, and he would say that this form of atrophied kidney was always associated with high pressure. When high pressures were found the physician always looked to the kidneys. On the other hand, there were cases of parenchymatous disease of the kidney associated with low blood pressures. Such patients, as pointed out by Sir Lauder Brunton, died very suddenly.

Sir CLIFFORD ALLBUTT briefly replied. It was, he said, impossible at that late hour to enter upon the questions raised by the three distinguished speakers. He thought that much of what Dr. Hawthorne had spoken was capable of explanation, but the methods of recording blood pressure and the like were outside the subject on which he undertook to speak. He could not agree with Dr. Schott that high arterial pressures were constant in the heterogeneous collection of *Schrumpfniere* as they were in the homogeneous class of Granular Kidney. The low pressures ending in sudden death were often the closing scenes of a long period of high pressures ending in cardiac defeat.

Dr. BUTTAR proposed a vote of thanks from the chair, not only to Sir Clifford Allbutt but also to Drs. Batty Shaw, Hawthorne, and Schott for their interesting speeches. This was carried by acclamation, and the meeting terminated.

Reports of Societies.

MEDICAL SOCIETY OF LONDON.

Monday, April 10th, 1911.

CHARTERS J. SYMONDS, F.R.C.S., President, in the Chair.

Hodgkin's Disease.

DR. F. PARKES WEBER read a paper on a case of late Hodgkin's disease. He pointed out that in true instances of this disease the lymphatic glands of some one region of the body were much more enlarged at first than the others, as if they constituted the primary focus or centre of the disease. Not rarely those on one side of the neck were chiefly affected at first; sometimes a group of retro-peritoneal glands seemed to be primarily involved. In a case which was under his care in 1908 the disease commenced in the mediastinum. When localized in the latter situation, it might give rise to a regular tumour mass. In one case the superficial glands, which at first formed a prominent tumour on one side of the neck, shrivelled up during the course of the disease so as to become hardly noticeable. The disease superficially appeared to be in process of cure, but in reality the lymphatic glands in the thoracic and abdominal cavities and the lymphatic tissue of the spleen were becoming gravely affected. Such cases were doubtless not rare. With regard to diagnosis, Hodgkin's disease might perhaps be simulated by malignant disease of the abdominal viscera (suprarenals), with secondary infiltration of lymphatic glands in the neck, and Rolleston and others had drawn attention to the possibility of cases with splenic enlargement and pyrexia suggesting a diagnosis of malaria or enteric fever. In only a few cases was the patient's temperature chart helpful in diagnosis. When there was any fever it was mostly of an irregular kind with a moderate evening rise, but occasionally

a long, regularly recurrent periodic type of fever was met with, the "chronic relapsing pyrexia" of Hodgkin's disease, which had been called the "Pel-Ebstein symptom," owing to the writings of Pel and Ebstein in 1887. Of that perhaps the most remarkable example in existence was an eight months' chart recently recorded by C. H. Melland. Such cases had even been labelled "Ebstein's disease." Less regular recurrent "pyrexial crises" were of rather commoner occurrence. During the pyrexial periods the superficial lymphatic glands were sometimes observed to swell. But if they became softer when they swelled they might fit together better, and so (with the fever) they might occasionally seem to diminish rather than increase in size. Wherever possible the diagnosis of Hodgkin's disease should be confirmed at an early stage by the excision and microscopical examination ("biopsy") of one of the enlarged lymph glands. Without the help of a "biopsy" it was by no means always so easy as some probably supposed to distinguish Hodgkin's disease from chronic tuberculous or syphilitic enlargement of lymph glands. Many persons were doubtless alive and well to-day who would have been long since dead had the diagnosis of Hodgkin's disease pronounced on them been correct. But doubtless arsenical therapy and Roentgen rays could be of real use in many genuine cases of Hodgkin's disease, even if a permanent cure could not be effected; that consideration made it very important that the diagnosis should be made as certain as possible by the help of a "biopsy." The great difference in the character of the progress of the tuberculous lymph glands and the lymph glands of Hodgkin's disease furnished another argument against the view that Hodgkin's disease was caused by any variety of the *Bacillus tuberculosis*.

Traumatic Neuroses.

Dr. F. S. PALMER read a paper on traumatic neuroses and psychoses and their medico-legal consideration.

ROYAL SOCIETY OF MEDICINE.

SECTION OF LARYNGOLOGY.

AT a meeting on April 7th, Dr. WATSON WILLIAMS, the President, in the chair, the following were among the exhibits:—Dr. HERBERT TILLEY: A *Pedunculated growth on an elongated uvula*, removed from a male aged 30. It had been present as long as the patient could remember, and had produced no symptoms whatever. It was thought to be a small fibroma. Mr. WALTER HOWARTH: A case of *Chronic laryngitis*. The patient suffered from profuse nasal discharge with crusts and also active necrosis of the nasal septum, which gradually cleared under potassium iodide. A year later the larynx became affected. The cords were seen to be red and thickened, and later on again the cords improved, while swelling appeared in the interarytenoid space. Dr. WILLIAM HILL: (1) A case of *Tracheo-laryngostomy* in a girl, aged 8, on whom a so-called high tracheotomy had been performed five years previously for diphtheria. Intubation tubes had been worn for three months, but stenosis quickly recurred on removal. (2) A case of *Carcinoma of œsophagus* in a man aged 45, previously shown at the meeting last December. At that time apparent cure had taken place after six prolonged applications of radium. There had been no application for four months, and there was now a well-marked malignant ulcer lower down in the gullet. Dr. HEMINGTON PEGLER: A case of *Functional aphonia* of three months' duration in a boy aged 14, who worked in an atmosphere containing irritating fumes. There was no dyspnœa, cough, or stridor. The cords, which were deeply injected, failed to approximate on attempts at phonation. The voice had returned under the application of liquor ferri perchloridi. Dr. W. JOBSON HORNE: A simple *Insufflator for application of powders* to the larynx, fauces, nose, and ear. It could be used equally well by the surgeon or the patient. Dr. W. H. KELSON: A microscopic section of a *Cyst of the tonsil*. The patient was a man aged 43, sent up from the country with a diagnosis of sarcoma of the tonsil. He had suffered from repeated attacks of sore throat, and the left tonsil had been slowly increasing in size for some months. He had slight pain and some difficulty in swallowing. The left tonsil was found to be very much enlarged, but no enlarged glands could be felt. The tonsil was partially enucleated, and then the cold wire snare applied. Dr. STCLAIR THOMSON: A case of complete *Stenosis of the larynx from epithelioma* in a man aged 23. Hoarseness had come on suddenly while the patient was in India. In May, 1910, laryngo-fissure was performed, and a tumour removed, together with the left cord. In October the same year he was admitted to King's College Hospital wearing a small tracheotomy tube in the region of the crico-thyroid membrane. There was stridor, the larynx was swollen and tender, and its entrance was occluded by the fixation of the arytenoids against the posterior surface of the epiglottis; later on an abscess developed in the neck and necrosed cartilage was removed. A section of the growth removed had been examined by pathologists, but opinions differed as to the presence or not of malignant disease. Dr. FITZGERALD FOWELL and Mr. BADGEROW: A woman aged 24 exhibiting what was considered to be *Vincent's angina*. Dr. DUNDAS GRANT: (1) A case of *Hypertrophy of the lingual tonsil* in a singer, which had been partially removed by linguo-tonsil guillotine; (2) a case of *Ulceration and infiltration of hard palate* in a woman subject to tuberculosis of the larynx. Dr. IRWIN MOORE: A case of *Lupus* of the nose, pharynx, and larynx in a man aged 25, who came to hospital complaining of a stoppage of the nose which had lasted three or four years; no laryngeal symptoms. Von Pirquet's reaction was positive. Dr. G. C. CATHCART: A baby aged 11 months, which shortly after a fall exhibited a swelling at the root of the nose. It became blue and swelled when the baby cried.

LIVERPOOL MEDICAL INSTITUTION.

AT a pathological meeting held on April 6th, Dr. BRADSHAW, President, in the chair, the President asked whether the administration of aperients augmented the bacterial virulence throughout the intestinal canal. They had lately been taught what was described as "the gospel of dirt," and it seemed as if they would before long be asked to accept a gospel of constipation. The following were among the specimens exhibited: Drs. STOPFORD TAYLOR and MACKENNA: Skin from a case of *Darier's disease*. Mr. NEWBOLT and Dr. MOORE ALEXANDER: A *Carcinoma* from the head of the pancreas of a woman aged 58. During life the tumour simulated a growth of the right kidney; there was no jaundice. Mr. DOUGLAS CRAWFORD: (1) Specimens of *Haemangioma* of the upper jaw from two girls, which clinically resembled ordinary epulis; one had recurred. (2) The spinal cord from a man, aged 23, who died thirty hours after a severe blow on the back of the neck, with complete loss of sensation in all the limbs and a temperature of 105°. There was no fracture of the vertebrae, but *Subdural haemorrhage* and complete severance of the cord. Mr. LARKIN and Dr. HICK: A *Gumma of the gall bladder*. Dr. WARRINGTON: Sections of the cord from a man with symptoms of tabes due to extensive *Syphilitic meningitis* of the cervical and lumbar regions. Dr. WIGLESWORTH: (1) A brain from a microcephalic epileptic imbecile, weighing only 600 grams, and simply convoluted. Microscopically the nerve cells were abnormal. (2) A brain from a macrocephalic idiot, weighing 1,775 grams, highly but abnormally convoluted. Microscopically the neuroglia was hyperplasic. (3) A brain from a macrocephalic epileptic, weighing 2,130 grams, highly and normally convoluted. Microscopically it was almost normal. Mr. G. E. SIMPSON read a note on a case of *Nephrolithiasis* in a boy aged 8, from whose kidneys numerous stones were removed; recovery was complete. Practically all the calculi had previously been demonstrated by *x* rays. Dr. ERNEST GLYNN compared the microscopical appearances of a case of suprarenal tumour with those of an ordinary renal hypernephroma, and showed that they were quite different. He believed that renal hypernephromata were not derived from suprarenal rests. Dr. O. T. WILLIAMS, in a paper on *Intestinal toxaemia*, stated that the vagueness of the term led to its being used loosely.

CLINICAL SOCIETY OF MANCHESTER.

AT a meeting on April 14th, the PRESIDENT (Mr. J. Howson Ray) in the chair, the following were among the exhibitors: Dr. J. STAVELEY DICK: A series of cases of *Tuberculous affection* undergoing treatment under

opsonic control with tuberculin (T R.). Two were cases of pulmonary tuberculosis under treatment for three and five months respectively. In both patients the inoculations had definitely controlled the temperature, and both expressed themselves as feeling much better. Two others were subjects of tubercle of bone. In one of these—a boy of 2—some difficulty was experienced in arriving at a satisfactory dose. The initial dose given was $\frac{1}{30000}$ mg., and at present he was having $\frac{1}{15000}$ mg. In this case the improvement so far had been very small. He came under observation in November, 1910. The other bone case—one of tuberculosis of the hip—was a man aged 44. When the inoculations were started he had three discharging sinuses, and was confined to bed with considerable oedema of both legs. The inoculations had been carried out for eleven months, the present dose being $\frac{1}{3000}$ mg. His condition was much improved. Another case was tuberculous adenitis in a woman whose index had risen, under treatment, from 0.8 to 1.3. In this case there was marked improvement in the anaemia. No iron had been administered. The commencing dose was $\frac{1}{30000}$ mg., the present one $\frac{1}{7000}$ mg. One of the glands had broken down, and, though the aspirated pus had proved sterile, she had been given doses of 100 to 500 millions of the staphylococcal vaccine. Another case in which it was difficult to estimate the amount of good done by the inoculation was one of tuberculous peritonitis on whom laparotomy had been done in January, 1911. Another case was a boy of 5 years of age who was very easily fatigued, fretful, anaemic, and occasionally had febrile attacks. No localizing signs could be found. His brother had died of tuberculous meningitis, and had suffered from a tuberculous hip. Previous to the treatment his opsonic index was 0.74. On March 18th he was given $\frac{1}{10000}$ mg., and on March 25th his index had risen to 1.56. Dr. C. C. HETWOOD: A case of *Disseminated sclerosis* of three years' standing, in which slow improvement was following the administration of "lymphoid" capsules. Dr. G. H. LANCASHIRE: Two cases of *Lupus* treated, with very good results, with "Morrow's" ointment, and one of very extensive *Staphylococcic dermatitis* involving the whole of the head and neck, where most rapid improvement had followed the injection of staphylococcic vaccine. Dr. R. W. MARSDEN: A man in whom all the signs and symptoms of chronic and long-standing nephritis were present, but who had had no symptoms of any kind for longer than three weeks.

BATH CLINICAL SOCIETY.

AT a meeting on April 7th, Mr. F. LACE, President, in the chair, Dr. G. H.-H. ALMOND, in a paper on *Cerebral oedema and epileptiform convulsions*, related the case of a woman aged 35 with a family diathesis towards functional instability. She herself had suffered from fainting attacks and hysterical manifestations; later her fits more closely resembled true epilepsy. Following a fall she had recurring epileptiform convulsions, bilateral at first, but after a time confined to the left side of the body, and finally to the left side of the face only. Her pupils became pin-point, her pulse thin and rapid, and breathing of the Cheyne Stokes variety. She died eighteen hours after the fall, having had over 100 fits. *Post mortem*, the coverings of the brain, which was opened first, were found to be intensely oedematous, and from 3 oz. to 5 oz. of free fluid were computed to have escaped. The sinuses were bloodless. No macroscopic lesion was found. There was old tuberculous disease of the right apex and pleura. The author said that sudden failure of the cerebral circulation frequently produced epileptiform convulsions, these being probably due to the increased excitability of the cerebral cortex resulting from accumulation of metabolic products. Drugs often proved futile, and lumbar puncture should not be delayed. This might also fail, especially if the base of the brain were firmly wedged into the os magnum. Trephining, or, better still, fenestration, should then be performed. The following were among the cases and specimens exhibited during the evening:—Dr. C. J. WHITBY: A boy, aged 9, suffering from a *Cerebral tumour*, characterized by paroxysmal attacks of headache followed by vomiting, marked double papilloedema and a tendency to walk to the right. The tongue when protruded deviated slightly to the right side. The knee-jerks were increased, especially the right, which showed a tendency to clonus. Concentric diminution of the colour field of vision for blue was present on both sides, but was more marked on the left. Von Pirquet's tuberculin cutireaction had proved negative. Dr. RUPERT WATERHOUSE: A girl, aged 26, with congenital anonychia of the fingers. The thumbs were not affected. Mr. A. DE V. BLATHWAYT: A *Sarcomatous tumour* of the gastro-hepatic omentum, removed from a woman aged 37; it had invaded the stomach wall and weighed 70 oz. There were secondary deposits in the liver which weighed 116 oz. Mr. PAGAN LOWE: An *x* ray photograph of progressive unilateral osteitis deformans of the right tibia in a patient aged 60.

ASSOCIATION OF REGISTERED MEDICAL WOMEN.

AT a meeting on April 4th, Mrs. DICKINSON BERRY, the President, in the chair, Miss MURDOCH, M D, read a paper on 30 cases treated by vaccines—3 of acne, 3 of gonorrhoea, 4 phthisis, 2 phthisis complicated by pneumonia, 15 tuberculous peritonitis, 1 tuberculous enteritis, 2 tuberculous adenitis. She also reported on 2 cases of tetanus treated with serum. The cases of acne were treated with a mixed vaccine of acne bacilli and staphylococci. All showed marked improvement, and so far—after from six to eighteen months—showed no relapse. One of the gonorrhoeal cases was treated, in addition to the vaccine, with vaginal swabs of lactic acid bacilli. The two other gonorrhoeal cases were in children still under treatment. They all showed marked improvement. With regard to tuberculin, the author was convinced of the value of the treatment in selected cases. She strongly deprecated its use in advanced cases with a mixed infection. As a general rule she gave a mixture of Tuberculin R., bacillary emulsion, and bovine tuberculin. In cases of tuberculous peritonitis great improvement had followed the use both of tuberculin and of this mixture. The abdominal masses in many cases had disappeared, and the patients had put on weight and improved in general health. Of the cases of phthisis complicated by pneumonia one died and one recovered after treatment with pneumococcal vaccine. The tetanus cases included one of tetanus neonatorum, which proved fatal after three days' illness. Several present joined in the discussion. Some favourable results were reported, but many had experienced great disappointment from relapses, especially in cases of acne.

Reviews.

MILITARY HYGIENE.

THIS work on military hygiene[1] has been compiled by Professors BISCHOFF, HOFFMANN, and SCHWIENING with the assistance of Doctors FINDEL, HETSCH, and KUTSCHER, who may well be regarded as the leading experts in hygiene of the German army medical service. In the preface the authors state that the want of a thoroughly comprehensive work on military hygiene has long been felt, and it is with the object of supplying this need that the present work has been undertaken. The compilers have tried to collect from every source all information having any practical bearing on military hygiene; a certain amount of theory has necessarily been introduced in order to make the subject complete, and a great deal of the contents apply as much to civil as to military problems.

The work will be published in five volumes, as follows—only the first three volumes have as yet been published:

I. Historical introduction by Schwiening; air, climate, and clothing in relation to the maintenance of the body's temperature by Findel; food by Bischoff.

II. Lighting, warming, ventilation, and construction of buildings by Hoffmann; water supplies by Hetsch; disposal of sewage by Kutscher.

III. Barracks by Hoffmann; recruiting and the hygienics of military service by Schwiening.

IV. Infectious diseases by Hoffmann, Hetsch, and Kutscher; diseases of armies by Schwiening.

V. Military medical statistics by Schwiening.

The work has been very fully illustrated, as the authors believe that technical details of apparatus or construction

[1] *Lehrbuch der Militärhygiene.* Bischoff, Hoffmann und Schwiening. Bibliothek von Coler-Schjerning. In 5 volumes. Berlin: A. Hirschwald. 1910. Vols. I, II, III. (Sup. roy. 8vo. M. 7 each vol.)

can be much more easily and quickly grasped by studying a diagram than by laboriously reading pages of description. They have written in the hope that the work will assist the student who is engaged in the study of hygiene, will prove a reliable guide for medical and other officers who are responsible for maintaining the health of the army, and will be found a handy work of reference for any one wishing to look up some point in hygiene.

The introductory chapter by Schwiening, in Volume I, gives a most interesting historical review of the origin and gradual development of the science of hygiene. Beginning with the orders for camp sanitation issued by Moses, he passes on to the Greek custom of burning corpses, as mentioned by Homer, the epidemic of plague which caused such heavy losses in Xerxes's army, and the plague which destroyed thousands of Athenians in 430 B.C. With the fall of the Roman Empire all mention of hygiene ceases for several centuries. In the later Middle Ages the terrible epidemics of plague began to arouse public opinion to the necessity for taking some kind of action to safeguard the general public health. As there were at that time no standing armies there was no military hygiene. The earliest mention is contained in *Kriegsbuch über die Landsknechtsheere*, Georg von Frundsberg, published at Frankfurt in 1578. This work directs the senior surgeon to investigate all diseases likely to spread among the troops; it also orders that the latrine is to be placed away from the camp, that the butchers are to slaughter at a specially appointed place, and that all blood and offal is to be cast into a flowing stream, or, failing this, it is to be burned; careful directions are given as to the source from which drinking water is to be taken, and a rough filter is described to render brackish water sweet. Schwiening recalls the speculations published by Fracastori of Verona in 1546 in which he sought to explain the spread of infectious diseases by a germ theory. Fabriz von Hilden gave directions for the destruction or disinfection with lime of dysenteric stools, and uttered a warning as to the danger of allowing men suffering from dysentery to use the same latrine as healthy men. Raymond Minderer, in his notes on military hygiene (1620), gave advice on the prevention of disease, the choice of camping grounds, and the necessity of having pure drinking water. For the purification of drinking water he advises that a heated stone should be quenched in it or a few drops of oil of vitriol added to it; if time permit, it should, he said, be boiled, then cooled, and a slice of toast thrown in. After these enlightened directions, it comes somewhat as a shock to find that he recommended as a sovereign remedy against all diseases a draught of one's own urine to be taken in the early morning and to inhale the odour of a used night commode. The question of house disinfection seems to have been taken up seriously by Purmann in 1738; he insisted on infected articles of no value being burnt, together with systematic fumigation of the dwelling with sulphur preparations and lime washing of the walls. Graf Moritz of Saxony, one of the earliest advocates of universal service, took a deep interest in the welfare of the soldier and effected many improvements in clothing and equipment.

Pringle, Physician-General to the English army in the Netherlands, was the first to point out that the hospital which was supposed to care for the sick, and by removing them from the healthy men to benefit the general health of the army, often acted in the reverse way and became a focus from which diseases spread to the troops. Pringle's views were corroborated by the leading surgeons in all the Continental armies, and, in consequence, Austria, Prussia, and France issued army medical regulations giving definite instructions on the formation and management of field hospitals.

Goerke's experiences of the shortcomings of the army medical service in the Rhine campaign led to the establishment of the Pepinière, as the Prussian army medical school was called, in 1795. Deficiency of funds, however, prevented any real progress being made. In Prussia the troops were billeted on the inhabitants up till 1816, and the general erection of barracks was only begun during the long period of rest following the Napoleonic wars. The only ration issued to the Prussian soldier at that time was bread; anything else he had to provide out of his pay. The cholera epidemics of 1831 and 1832 in England first directed public opinion to the necessity for adopting some measures to remove and prevent the recurrence of the insanitary conditions under which the inhabitants of the large towns were then existing. This led to a serious study of the problems connected with public health. With the general advance of knowledge in chemistry, physics, and allied subjects sanitation soon began to be an exact science.

In Section I Findel describes the composition of the air, methods of examining it, and its impurities. Flügge's experiments, if confirmed by other observers, should prove of great interest to medical officers serving in the tropics. He has adduced evidence that the headache and other unpleasant symptoms produced by an overcrowded stuffy room are not due to poisonous exhalations from the lungs, but to interference with the loss of heat from the body caused by the rise in temperature and humidity resulting from the overcrowding; these symptoms disappear at once without renewal of the air in the room if it be set in rapid motion by means of fans. In the next section, which is also by Findel, the generation of heat and the regulation of temperature in the human body are very fully discussed. From a military medical point of view the chapter on clothing and equipment is of great importance. Many interesting experiments undertaken to determine the properties of different materials and their suitability for military clothing are fully described, together with the results obtained. For instance, a table on page 125 shows, among other details, that each ounce of material used for the German greatcoat will, when saturated, take up 3 oz. of water, and when thoroughly wetted, as it would be after exposure to heavy rain, the coat absorbs so much water that the wearer would have to carry more than twice the original weight of the garment. The articles in a soldier's equipment are fully described and their suitability criticized. Thus, the German soldier does not receive a free issue of stockings, and he must either purchase these for himself or use *Fusslappen*, a kind of bandage prepared by folding a square piece of cloth round the foot; when carefully put on they are an excellent substitute for stockings, and in some respects superior to them. The equipment of other armies is also described and illustrated mainly by reproductions from the French work *Sac au dos*.

The remaining three sections of the first volume are concerned with food and feeding. The subject is very fully treated by Bischoff, who first gives the chemical composition of the constituents of food, and describes the investigation of their calorimetric value. He then proceeds to discuss the changes which take place in the body, showing how these vary according to climate, age, work performed, etc. The calorimetric and food values of different articles of diet are given in a table on page 246. The table on page 251 is of interest as showing how much of any of the commoner articles of diet can be purchased for 1 mark (1s.); potatoes, sugar, and wheaten flour appear to yield the best value for the money expended.

The next chapter deals with the trade aspects of food supply, more especially with the preservation and adulteration of food. The article on the changes which may take place in milk is most instructive. Here Bischoff points out that by raising milk, placed in closed vessels, to boiling point the lactic acid bacilli and many others are destroyed, but the butyric acid bacillus and some belonging to the hay bacillus group are not killed; on the contrary, owing to the absence of free oxygen and living lactic acid bacilli, they are enabled to multiply and produce deleterious changes in the milk. Of special interest to military medical officers are the chapters on rations and hospital dieting.

Volume II begins with a section on the hygiene of buildings by Hoffmann. In the first chapter he gives a general review of the subject of soil in relation to the construction of dwellings. Chapter 2 deals with the actual construction of a dwelling and contains much interesting information of a practical character, as, for instance, the different ways in which floors may be rendered soundproof, and the table giving the results of experiments carried out in Berlin to determine the relative durability of different materials used for flooring. In Chapter 3 he discusses the question of how soon after completion a new building may be occupied with safety; the conclusion being that in summer four months and in winter six months should be allowed to elapse between the com-

pletion and occupation of any dwelling house. The next section is devoted to the natural and artificial lighting of houses. The subject is fully considered and an immense amount of information is given as to cost, effect on the air of rooms, nature of the light rays produced, etc, by different methods of artificial illumination; each being fully described and illustrated. In the discussion of the different methods of warming houses, which follows next in order, all the ordinary plans are fully described and well illustrated. An account of the system of "distant heating" employed in Dresden and some other cities is of particular interest; a central heating installation is set up at some convenient spot and steam or hot water is conveyed in specially laid pipes to a number of different buildings, within a radius of—in the case of Dresden—over half a mile from the generating station. The advantages claimed are economy in superintendence and the absence of danger from fire.

Water supplies are discussed by Hetsch in Section V. The diagrams of geological formations responsible for the different kinds of springs are good. On page 204 there is a useful table showing how much water is required for various purposes (*a*) in private houses, (*b*) in public institutions, (*c*) for municipal needs. The chapters on the examination of water and the interpretation of the results should prove of assistance to any one having to undertake this duty. The electrical resistance of any water is mentioned as a rough index of the occurrence of any contamination; the resistance of any particular water remains nearly constant, but in the event of any serious contamination the increase in the salts produces a rapid fall in the resistance. The diverse opinions on the importance attaching to the discovery of *B. coli communis* in a drinking water are concisely summarized on page 227. Eijkmann's differential culture test for *B. coli* is described, but it is expressly stated that no opinion on a water should be given without first carefully inspecting the source from which it is obtained. The purification of water by filtration, chemicals, etc., both for settled communities and armies in the field, receives a full share of attention.

The last section of the volume deals with the disposal of sewage, slop water and garbage. The oil siphon urinal shown on page 352 would seem to afford a solution of the difficulty experienced in preventing objectionable smells in urinals when the supply of flushing water is limited.

Volume III is the most interesting to an army medical officer, as it describes the practical application to the soldier's life of the subjects which have been discussed in the first two volumes. The first section is by Professor Hoffmann; it deals very thoroughly with the hygienic aspects of all kinds of buildings and tents which are used for the accommodation of officers and men during any portion of their service in the army.

The systematic construction of barracks dates from 1685, when Vauban designed barracks for Louis XIV. The main consideration at that time was to house the men as cheaply as possible, and the building, therefore, took the form of a quadrangle, probably in imitation of the Roman *castellum*. This type was unfortunately adopted by all the other countries, and remained the standard design for barracks for some 200 years. Although it was recognized that the type did not afford satisfactory accommodation, it was not till the experiences of the Crimean war had awakened public opinion to the necessity of improving the hygienic conditions of the soldier's life that serious efforts were made to improve his accommodation in barracks. The first departure from Vauban's standard consisted in building four separate blocks, one on each side of a square, so that a space was left at each corner for the admission of fresh air. The next step was to omit one side of the square altogether, and this (the French pattern of 1874), combined with proper siting, provided a fairly satisfactory barracks.

In the matter of barrack construction Prussia was somewhat backward compared to other States, as up till 1820 Prussian soldiers were billeted on the inhabitants. In that year the construction of barracks was begun. Owing to the high cost of building sites the earliest barracks were built on the lines of Vauban's designs. Improvements were gradually introduced in all the later ones; the barrack regulations of 1889 definitely accepted the principle of providing a separate building for each double company, each block having its own class rooms, ablution rooms, etc. Plans are given of a large number of barracks to show the arrangements in different types; the standard plans drawn up by the Barrack Department of the Prussian War Office are well worth studying.

The German shelter tent, which is carried by every man on manœuvres or active service, is illustrated and described. It consists of a piece of waterproofed cloth 5 ft. 6 in. square, one cord, one jointed pole, and three pegs; on each side of the square there are eight aluminium buttons, and close to them eight button-holes, so that several pieces of the fabric can be joined together to form a large tent.

The German hospital tent M. 99 has a double wall; the outer one is composed of strong cotton treated with ammoniated cupric oxide. It can accommodate 16 to 20 beds, and has no projecting pegs or ropes. This tent proved very satisfactory during the campaign in German South-west Africa. The hospital tent M. 03 is an improved pattern very similar to M. 99; it weighs just over a ton, and can accommodate 24 beds.

In garrisons having a strength of 600 or over there is a military hospital; in smaller garrisons the sick are sent to a civil hospital. Although the average constantly sick in hospital during the decennium ending 1906 was only 1.77 per cent. of the strength, the hospital accommodation is calculated at 3.5 to 4 per cent. in order to have a margin in case of any outbreak of disease. In calculating the area required for a hospital site the minimum space laid down is 132 square yards per head of the sick population to be accommodated, although in practice the area is seldom below 180 square yards per head. The advantages and disadvantages of different types of hospital are very fully discussed, and many site plans and illustrations of operating rooms, kitchens, etc., are reproduced.

The description of the recently opened officers' convalescent home in the Taunus is most interesting, especially in regard to its heating and internal arrangements.

Borsig's apparatus for removing dust is ingenious. The nozzle has a double set of openings, one of which emits fine jets of compressed air, which, penetrating the fabric, loosen the contained dust, while the other set is connected with a vacuum by which the dust is sucked up and carried to a filter.

The second section of the volume deals with the hygienics of military service, and is written by Professor Schwiening, who remarks that practically all the cultured States have now adopted universal military service, although in some the so-called conscription, by which substitutes are allowed, still obtains, and that only a very few nations still cling to the ancient practice of voluntary enlistment for military service. The value of universal service in improving the health of the nation is insisted on, and the author promises to examine this question more fully in Volume V, under the subject of military medical statistics. Schwiening contends that voluntary enlistment has many disadvantages, among which he notes the difference in age of the recruits, so that the men are not physically fit to stand the same amount of strain, and that the social standing of voluntarily enlisted soldiers is not as a rule very good, so that the choice of material is often extremely limited, and hence many of the recruits are morally and physically below the average of the civil population.

The procedure of recruitment, as also the terms of service in the German army, are given in full, and two interesting tables are provided showing the periods of liability for service, and also the actual period of service in the armies of most of the countries of the world. The average age at which recruits are enrolled in most of the European countries is 20 to 21; Hoffmann points out that this is the ideal age for military training, as then the bones and muscles are well developed and able to stand the strain of military service, while if the enrolment were postponed till a later age it would seriously prejudice the man's career in civil life. When dealing with the examination of recruits Schwiening presents us with a great deal of statistical information on the relations between height, chest measurement, and weight. He discusses the different formulae which have been propounded in the attempt to fix a standard by which a recruit's fitness for military service might be accurately estimated, independently of the medical officer's personal bias towards any one determining factor. Schwiening shows that all

these formulae have only a limited application, but can be used to estimate the average fitness of a body of men. Zuntz and Schumburg's experimental work has been freely drawn on when discussing the consumption of energy in marching, and to show how this is affected by increasing the pace, carrying a load, or any circumstance which interferes with the man's comfort in marching. Numerous observations show that roughly half the men enlisted increase in height during their service, and that this gain is most marked among the smaller men. An interesting observation made by G. Schmidt shows that men quartered in the ground floor of barracks put on more weight during their service than those who are quartered in the third story. Several cephalograms are reproduced to show the effect of fatigue and the difference between a fully-trained man and a recruit. The mental and physical strain entailed by service in each of the special branches of the army, including the balloon and aëroplane companies, receives due consideration.

The three volumes published up to the present contain so much information on every condition which has any bearing on military hygiene that it has only been possible here to refer to a few of the more interesting matters dealt with. The authors deserve our heartiest congratulations for the thoroughness with which they have carried out their undertaking. Considering the number of illustrations and the excellence of the paper and print, we may safely say that it is one of the cheapest scientific works published, and one likely to remain a standard work for many years to come.

DERMATOLOGY.

THE magnificent Hamburg atlas of pathology[2] supplies illustrations of carefully selected types of the most important changes in the structure of the human body caused by disease. It may be called an art gallery of morbid anatomy. Accompanying each plate is the clinical history of the case; this adds immensely to its value. It is impossible to review a work of this kind in detail. We can only echo the statement of Professor LORRAIN SMITH, in his preface to the English edition, that "the plates are so clear that the impression produced by a study of them approaches that derived from actual observation of the morbid organs." They cannot fail to be of the greatest help to the student of pathology. We heartily congratulate the authors on the successful accomplishment of a task of such magnitude. The work should be in every medical library and in the pathological department of every hospital and asylum.

Dr. J. J. PRINGLE, in his preface to the third English edition of Professor JACOBI'S *Portfolio of Dermochromes*,[3] states that it contains practically all the old plates and text embodied in the two former editions and in the Supplement, published in 1906. They have, however, been rearranged, and ten entirely new plates with short articles describing the essential features of the diseases illustrated have been added. Twelve photomicrographs of the commoner parasitic fungi causing diseases of the skin have also been added with a brief explanatory text. As Dr. Pringle points out, for English-speaking nations such illustrations are necessary, inasmuch as microscopic examination is requisite for the diagnosis of these affections, many of which occur with especial frequency in Great Britain and its colonies. For the use of these photomicrographs he expresses his indebtedness to Dr. Arthur Whitfield and Dr. H. G. Adamson. It is superfluous to say anything in praise of a work which, besides having reached a third edition in English, has been translated into French, Italian, Spanish, and Russian. The plates are beautifully executed; there is none of the blotchiness or over-colouring which so often make representations of skin diseases unnatural. So true to life are these "dermochromes," that in the case of affections which the student has few opportunities of seeing they may be taken as fairly satisfactory substitutes for actual patients. The work may be confidently recommended to students and practitioners as a most useful complement to any treatise on diseases of the skin.

Professor GAUCHER'S well-known work on *Diseases of the Skin*[4] has been done into English by Dr. C. F. MARSHALL, and published in a handy volume of some 500 pages. The text covers the whole ground of dermatology, and includes also an excellent review of the cutaneous syphilides. It is almost superfluous to say that, coming from the pen of so experienced a physician as Professor Gaucher, the subject of cutaneous maladies is dealt with in a broad-minded manner, the point of view of general medicine and pathological processes being kept well to the fore. In the preparation of his book Professor Gaucher, too, has had the advantage of the collaboration in special departments of Drs. Wickham, Degrais, and Dominici for the chapter on radium therapy containing details as to methods, which should prove of great value to those working with radium. Drs. Gastou and Zimmern have contributed interesting chapters on radio-therapy. There are also special articles on sporotrichosis by Dr. Monier-Vinard; on blastomycosis by Dr. Rubens-Duval; and on the histology of mycosis fungoides by Dr. Dominici; whilst the subject of yaws has been briefly outlined by the translator. The book can be strongly recommended as a very readable account of skin diseases and cutaneous syphilides, the value of the work being greatly enhanced by the numerous illustrations and plates, mainly from the well-known beautiful models in the St. Louis Hospital and from others in Professor Gaucher's private collection. Readers desirous of acquainting themselves with the views of the French school of dermatology cannot do better than consult this clearly written work, especially as the English version is well done.

A review of a fifth edition of Professor STELWAGON'S *Treatise on Diseases of the Skin* appeared in the JOURNAL of February 6th, 1909, p. 343. The fact that a sixth edition[5] has been called for at so short an interval is the best testimony to the value of the work and to the appreciation which it meets with from those for whose help it is intended. A book in its sixth edition may justly be held to have passed beyond the sphere of the reviewer. We need only say that in the new edition the article on pellagra—a disease which has in recent years been prevalent in certain parts of America to an extent which is causing some uneasiness—has been completely rewritten. Sporotrichosis, which the author says is "a malady of growing importance," is now included in the book for the first time. Various parasitic diseases of which little is yet known are described. Some tropical affections which find a place bear witness to the recent tendency to colonial expansion shown by the United States. Twenty-five new illustrations have been introduced. Professor Stelwagon's work is one of the fullest, clearest, and most trustworthy of modern treatises on diseases of the skin.

---

[2] *Aus den Hamburger Staatskrankenhäusern: Pathologisch-anatomische Tafeln nach Präparaten.* Mit erläuternden anatomisch-klinischem Text unter Mitwirkung. Von weiland Prof. Dr. Alfred Kast, Professor der klinischen Medizin in Breslau, früherem Direktor der Hamburgischen Staatskrankenhäuser weiterherausgegeben von Prof. Dr. Eugen Fraenkel und Dr. Theodor Rumpel. [From the State Hospitals, Hamburg: Atlas of Pathological Anatomy (reproduced from recent specimens). With explanatory text, anatomical and clinical. By the late Prof. Dr. Alfred Kast, Professor of Clinical Medicine in Breslau, and formerly Director of the State Hospitals, Hamburg, and Prof. Dr. Eugen Fraenkel, Prosector at the General Hospital, Hamburg-Eppendorf, and Dr. Theodor Rumpel, Senior Physician, the General Hospital, Hamburg-Eppendorf. With a Preface to the English Edition by J. Lorrain Smith, M.D., Professor of Pathology, University of Manchester. Translation by Francis C. Purser, M.D., Assistant Physician, Richmond, Whitworth, and Hardwicke Hospitals, Dublin. Complete in 26 parts. Leipzig: Verlag von Dr. Werner Klinkhardt; London: Baillière, Tindall and Cox. (Single parts, 5s. net; single plates, 1s. 6d. net.)]

[3] *Portfolio of Dermochromes.* By Professor Jacobi, of Freiburg im Breisgau. English Adaptation of Text, by J. J Pringle, M.B., F.R.C.P., Physician to the Department for Diseases of the Skin at the Middlesex Hospital, London. With 245 coloured, 2 black and white, illustrations on 132 plates, and 12 photomicrographs of parasitic fungi. Third Revised and Enlarged Edition. Volumes I, II, and III. London: Rebman Limited. 1910. (Demy 4to. 86s.)

[4] *Diseases of the Skin, including Radio-therapy and Radium-therapy.* By Ernest Gaucher, Professor of Cutaneous Diseases at the Faculty of Medicine, Paris. Translated by C. F. Marshall, M.Sc., M.D., F.R.C.S. With numerous illustrations. London: John Murray. 1910. (Med. 8vo, pp. 460, 196 Figs. 15s.)

[5] *Treatise on Diseases of the Skin,* for the use of Advanced Students and Practitioners. By Henry W. Stelwagon, M.D., Ph.D. Sixth edition, thoroughly revised. With 289 illustrations in the text, and 34 full-page coloured and half-tone plates. Philadelphia and London: W. B. Saunders Company. 1910. (Roy. 8vo, pp. 1195. 25s.)

MEDICAL DIAGNOSIS.

THE task of describing and discussing the problems of medical diagnosis as applied to the whole field of internal medicine is no light one, and Drs. SCHMIDT of Halle and LÜTHJE of Kiel[6] are to be congratulated on the courage they have displayed in the preparation of a book on the subject in which the omissions are few and the information, for the most part, fully up to the present standard of knowledge. Originally founded on the successful work by the late Professor Vierordt, the book is divided into sections dealing with each system in turn; the authors have contributed in about equal shares, and their articles are signed. Although intended as a general treatise on the subject rather than as a work of reference, it serves the double purpose in that it is written in readable if somewhat prolix style, while its systematic arrangement enables the reader to find at once the information that he may be seeking. The necessity for a sound knowledge of physiology in the study of morbid conditions is rightly dwelt upon, and although adding largely to the bulk of the volume, the introduction of physiological descriptions renders many subjects more comprehensible, and may be welcomed by middle-aged readers who find it difficult to keep pace with the rapid advances of recent years. The introductory chapter on diagnosis in general is followed by an important section descriptive of the chief pathogenic microbes, with illustrations and minute directions as to the best methods of staining and identifying them. To this succeeds a chapter on sero-diagnosis, of which a clear account is given of the present state of scientific thought on the subject. The diagnosis of pulmonary disease is discussed at greater length than necessary, owing to the introduction of much elementary matter, and from the home point of view the study would seem to be elaborated beyond the limits of practical usefulness. Of cardiac and circulatory disorder a very full account is given, although some of the more elaborate methods of recording cardiac and vascular movements simultaneously do not find illustration. Pathological chemistry is constantly called to the aid of diagnosis in the investigation of disorders of secretion and excretion, and the authors have successfully indicated, in special sections, the lines upon which it can best be utilized; the final chapter on the diseases of the nervous system contains a very full account of all that is recognized as valuable in diagnosis. Of prognosis there is by no means so full a mention in any of the sections, but taken as a whole the book is a compendium of valuable information, well arranged and well written.

The small volume recently published by Dr. CHARLES B. SLADE on *Physical Examination and Diagnostic Anatomy*[7] is obviously intended for the use of students. It deals with the elementary facts only of physical diagnosis, and leaves wider information to be sought in more comprehensive treatises, when the student shall have reached that stage of his education at which he is able to appreciate and make himself master of diagnostic refinements. The book is one of many published on the subject with which it deals. The information it conveys is reliable; the subject matter is arranged in careful sequence to make reference easy; and the various landmarks of the human body are described and illustrated in such clear outline as to render their recognition on the living subject simple and sure. Dr. Slade succeeds in infusing interest into a somewhat dry subject by the facility of his writing and the aptness of his illustration. His book will prove a valuable guide to those who are commencing the study of physical diagnosis, and will be helpful also to practitioners who wish to refresh their memories on broad questions of medical anatomy about one or more of which, in the multiplicity of facts stored up in hospital days, they may have become hazy. There is a comprehensive and excellent index. The publishers are to be congratulated on the clear and legible type they have chosen, and on the success of the illustrations with which the book is embellished.

[6] *Klinische Diagnostik und Propädeutik innerer Krankheiten.* By Dr. Adolf Schmidt of Halle and Dr. H. Lüthje of Kiel. Leipzig: F. C. W. Vogel. 1910. (Roy. 8vo, pp. 587; illustrations. M.14.)

[7] *Physical Examination and Diagnostic Anatomy.* By Charles B. Slade, M.D., Chief of a clinic in General Medicine, and Instructor in Physical Diagnosis in the University and Bellevue Hospital Medical College, New York. 1910. Philadelphia and London: W. B. Saunders Company. 1910. (Demy 8vo, pp. 146; illustrated. 6s.)

The bulky volume which Dr. ALBERT ABRAMS calls *Diagnostic Therapeutics*[8] is a miscellaneous compilation which appears to testify to enormous literary industry. According to the preface, it is neither a work on therapeutics nor on diagnosis, but an attempt to conciliate both subjects with a "special object" in view. It is not easy to gather, either from the preface or from an examination of the book, what this special object is. No doubt light is often thrown upon diagnosis by the results of treatment, but Dr. Abrams's plan involves infinitely more than this, for his book includes not only all methods of treatment but every means of examination, and ranges widely over all departments of medicine, gynæcology, and surgery. This great mass is collected but not digested. Here and there occur a few remarks expressing the author's own views or personal experience, but they are not full enough to afford an adequate reason for the book. The illustrations are mostly second-hand, and where they are not, are, as a rule, rough and poor. We have noted a fair number of slips of various kinds, but in a compilation of this size they are perhaps unavoidable; there are also omissions under certain headings, but, on the whole, the work, such as it is, has been brought very well up to date.

BACTERIOLOGY.

PROFESSORS MUIR AND RITCHIE have brought out a fifth edition of their deservedly popular *Manual of Bacteriology*.[9] We have compared it with the previous edition issued three years ago, and can assure our readers that the task of revision has been carried out with the care and thoroughness which is characteristic of the work of these authors. The incorporation of new work on blood and immunity is particularly important, and we are glad to find that the technicalities and intricacies of these subjects are explained in a manner which is not beyond the comprehension of medical students. A new feature of the book is the introduction of six coloured plates, amongst which the one illustrating malarial parasites may be particularly commended.

Dr. STITT'S *Practical Bacteriology, Blood Work, and Animal Parasitology*,[10] which has now reached a second edition, aims at giving the maximum of instruction in laboratory technique in the shortest possible space. In some of the sections on the pathogenic bacteria abbreviation is carried too far; such important organisms as the typhoid and the tubercle bacillus ought to have been treated more fully. The chapter on normal and pathological blood is also too brief for so extensive a subject. The author appears to be specially interested in animal parasitology, and gives us, in Part III, a useful and very interesting account of the parasites which are of pathological importance. Other writers would do well to follow his example by familiarizing medical students with the anatomy of fleas, biting flies, and mosquitos.

In the preface to their *Textbook of General Bacteriology*[11] Professors FROST and MCCAMPBELL state that "a brief but comprehensive text on this subject is a desideratum." Their book is "general" in two senses. It is a light and popular account of elementary bacteriology, and it discusses the biological characteristics of all sorts of bacteria, without limitation to those known to be of medical importance. The volume incorporates much which is of interest concerning bacteriological chemistry and agricultural bacteriology, but the treatment of the bacteria pathogenic to man is very brief and inadequate. On page 29 the authors, quoting from Fischer, make a remarkable statement about the anthrax bacillus. They say that of these bacilli "8,000,000 at least would be required to equal a mass the size of an ordinary cigarette." If this be even approximately true, the "ordinary" cigarette must be

[8] *Diagnostic Therapeutics.* By Albert Abrams, A.M., M.D. London: Rebman, Limited. 1910. (Roy. 8vo, pp. 1057; 198 illustrations. 21s.)

[9] *Manual of Bacteriology.* By Robert Muir, M.A., M.D., F.R.C.P.Edin., and James Ritchie, M.A., M.D., F.R.C.P.Edin. Fifth edition. London: Henry Frowde, and Hodder and Stoughton. 1910. (Crown 8vo, pp. 721, 174 illustrations in the text and 6 coloured plates. 10s 6d.)

[10] *Practical Bacteriology, Blood Work, and Animal Parasitology.* By E. R. Stitt, A.B., Ph.G., M.D. Second edition, revised and enlarged. London: H. K. Lewis. 1911. (Post 8vo, pp. 358; 91 illustrations. 6s 6d.)

[11] *A Textbook of General Bacteriology.* By William Dodge Frost and Eugene Franklin McCampbell. New York: The Macmillan Company. 1910. (Crown 8vo, pp. 357; with illustrations. 7s.)

extraordinarily small. Bacilli are not particularly light in proportion to their bulk, and, as the authors say in their next sentence, it takes 10,000,000,000 average bacteria to weigh a milligram.

The fourth edition of the translation, by Mr. DAVIES, of Professor JÖRGENSEN'S *Micro-organisms and Fermentation*[12] is based on the fifth German edition. It embodies the results of the ten years of research work which has been conducted since the last English edition appeared, and, in consequence, has been so much expanded and modified as to be practically a new work. The second half of the book, which is concerned with the yeasts, will prove invaluable to those interested in the sciences of brewing and wine fermentation. It is a model of scientific thoroughness and precision, and must be recognized as the standard work on these subjects. Of the earlier chapters, those on the moulds and the ferments produced by bacteria are also of great industrial importance, and may be particularly recommended to persons in this country who are interested in the manufacture of dairy products. Apart from its commercial importance, Professor Jörgensen's work will be appreciated by medical pathologists who resort to fermentation tests for the differentiation of pathogenic bacteria. The bacteriologists' "sugar tests" are of proved utility, though they may seem empirical and difficult to interpret in the exact formulae of organic chemistry. But the accumulated evidence pointing to the wonderful diversity and marvellous selective action of the ferments produced throughout the whole range of micro-organic life supports the view that the attacking powers of bacteria upon carbohydrates are due to intrinsic biological properties which will ultimately be explained in conformity with the precise laws of chemical interaction.

MEDICAL EVIDENCE.

IN the introduction to his book on *Bodily Injuries*[13] Mr. DARKER, of the Middle Temple, briefly reviews the principles which underlie but did not give rise to the laws relating to bodily injuries, and notes that when security from bodily harm is the outcome of a balance of legal duties, then the party upsetting such equilibrium is the person who, in law, is primarily responsible for the injury and damage done. He also shows how easily even the most truthful person may fail to be a faithful witness as to facts. The stumbling block lies in the difficulty of dissociating mental conceptions from visual, auditory, and other sense impressions. The reasons why medical evidence of a kind which prima facie should be admirable often fails to have the right effect on the progress of a case are considered on the same lines. The right questions are put to the wrong people, either intentionally or from ignorance. Unless the position of the witness has been placed before the court in true perspective, the value of his whole evidence may be discounted by his failure to deal satisfactorily with a question which the court, if aware of his real position, would recognize was outside the scope of his work. Instances in point will occur to most medical men who have been present at trials. They must have heard the effect of excellent evidence from general practitioners damaged by their being asked questions relating to, say, advanced bacteriology, and the effect of similar testimony from surgeons weakened by their ignorance on matters ostensibly but not actually within their expert knowledge. These considerations should be borne in mind when selecting witnesses. If experience and knowledge of the consultant may be deep, that of the general practitioner is wide. For severe complicated and rare complaints and injuries, it is the consultant who should be called, but for pains and hurts of a general nature or mere ordinary occurrence it is the general practitioner who is likely to make the more useful witness. The length of time an ordinary sprained ankle compels a person to keep away from work is probably best known to a general practitioner, but an opinion on the cause of an obscure pain in the loins might best be formed by a consultant. The body of the book is an alphabetic list of many hundreds of cases in which questions of injury arose and in which decisions on forming more or less permanent precedents were reached. The special point which arose in each of them is briefly noted. This list is intended to be used as the foundation of a card index system of keeping a record of such cases, and to facilitate reference to the list a good index is supplied. The primary object of the book, no doubt, is to assist solicitors and others in bringing or defending actions on behalf of their clients, but it should also be found useful to medical men when consulted by patients in respect of compensation. The compilation of the book must have been a most laborious undertaking; it has been thoroughly well done.

[12] *Micro-organisms and Fermentation.* By Alfred Jörgensen. Translated by S. H. Davies, M.Sc. Fourth edition, completely revised. London: Charles Griffin and Co. 1911. (Demy 8vo, pp. 489. 15s. net.)

[13] *Bodily Injuries.* By G. F. Darker, M.R.C.S., L.R.C.P., D.P.H.Durh., Barrister-at-Law. London: Winkley and Son, The St. Saviour's Press. 1911. (Fcap. 8vo, pp. 259. Price 2s. 6d.; in card index form, £2 2s.)

NOTES ON BOOKS.

THE sixty-fourth volume of *Guy's Hospital Reports*[14] includes an important article by Mr. NATHAN MUTCH, of equal interest to the physician and surgeon. It is entitled "The Treatment of Appendicitis, Based on 545 Cases Admitted to Guy's Hospital, 1906–1909 Inclusive." It is a careful analysis of all the factors which must be taken into account in relation to treatment. Mr. Mutch concludes that these cases demonstrate the advisability of operation within the first thirty-six hours in all cases of appendicitis with a definite onset of severe symptoms not subsiding in twenty four hours. Peritoneal drainage should be reduced to a minimum. Another good bit of work, eminently suited for archives of this type, is Mr. R. H. Jocelyn Swan's "Primary Unilateral Renal Tuberculosis: A Report on 13 Cases, with a Collection of 79 Cases from the Records of Guy's and St. Peter's Hospitals." Professor Starling's article on the "Physiology of Digestion" is of the highest importance. The alimentary canal is indeed the chief feature in this volume, for besides the above-mentioned writings of Mr. Mutch and Professor Starling, there is a remarkable medico-chirurgical paper on "A Case of Phlegmonous Gastritis from Hydrochloric Acid Poisoning: Vomiting of the Complete Mucous Membrane of the Pyloric Half of the Stomach," by Mr. S. A. Clarke, Dr. A. F. Hertz, and Mr. Rowlands, also Drs. Cameron and Rippmann's "*Post-Mortem* Statistics of Ulcerative Colitis at Guy's Hospital from 1888 to 1907," also a note by the same authors on "Five Cases in which Acquired Diverticula of the Sigmoid led to Death," and, lastly, a communication of general interest on "The Sensibility of the Alimentary Canal," by Dr. Hertz and Mr. Cook, Mr. Marshall, and Mr. Schlesinger. Anaesthesia is well represented by Dr. C. D. Edwards' "Influence of Anaesthetics on the Blood Pressure," Dr. Gordon Goodhart's "Notes on Chloroform Necrosis of the Liver," and, turning to a subject more indirectly, but still intimately, allied to anaesthesia, Dr. Hildred Carlyll's "Thymus Gland and the Status Lymphaticus." According to Dr. Carlyll, death has occurred in cases of status lymphaticus in a great many ways independent of anaesthesia; the author's brief abstract of 61 cases, including all complications, will prove of high value. Dr. Herbert French reports "A Case of Acute Fatal Staphylococcal Septicaemia," and Drs. Cameron and Rippmann publish "A Case of Primary Sarcoma of the Lung." Mr. Mollison's "Report of the Arthur Durham Travelling Student" is worth reading for the sake of his remarks, not always laudatory, on Continental hospitals.

Among the communications of special interest in the thirty-fifth volume of the *Transactions of the American Gynaecological Society*[15] we may note that which stands last, namely, the Report of the Committee of the American Gynaecological Society on the Present Status of Obstetrical Education in Europe and America, and on Recommendations for the Improvement of Obstetrical Teaching in America. A short synopsis of the curriculum required by the legally recognized qualifying bodies in the United Kingdom, Germany, Austria, Switzerland, France, and Italy, is included in the report. Professor Herbert Spencer has prepared the British synopsis. In contrast a report is selected from seven representative medical schools in the United States which the committee considered among the best in that country. The seven which receive the honour of this selection are the schools of Columbia, Cornell, Harvard, Johns Hopkins, Chicago, and Pennsylvania Universities, and the Jefferson Medical College, Philadelphia. As far as these bare reports can show us, it would seem

[14] *Guy's Hospital Reports.* Edited by F. J. Steward, M.S., and Herbert French, M.D. Vol. lxiv, being Vol. xlix of the Third Series. London: J. and A. Churchill. 1910. (Demy 8vo, pp. 476.)

[15] *Transactions of the American Gynaecological Society.* Vol. xxxv. For the year 1910. Philadelphia: Dornan. 1910. (8vo, pp. 566.)

that education in obstetrics is far better conducted on both sides of the Atlantic now than it was in the last generation, and as a report cannot take into consideration the splendid results of aseptic technique, improved hygiene, and other developments of science facilitating illumination, communication between members of the visiting and resident staff, etc., the reader cannot do justice to such a report without bearing in mind what good all this progress has wrought. The lying in ward, for instance, being no longer a death-trap, is now added to medical school hospitals, to the great advantage of the teacher and student, as well as the patient. The President, Dr. Edward P. Davis, in his annual address, speaks of "the crude obstetric practice of fifty years ago." Obstetric teaching was yet rawer. Proudly yet justly does Dr. Davis boast that his countrymen have played a prominent part in advancing midwifery during the past five decades, keeping step with the equally rapid advances in surgery and bacteriology which have thrown so much lustre on medical art and science. The volume includes a large number of monographs and papers of interest, some of which will be noted in the EPITOME.

THE SALE OF QUACK MEDICINES.

DEMAND FOR LEGISLATION.

AT the annual meeting of the Association of County Councils in Scotland, which was held in the County Rooms, Edinburgh, last week, the Executive Committee recommended the Association to adopt a resolution to the effect that the Sale of Food and Drugs Acts should be amended and extended so as to provide:

1. That for medicines which are supplied otherwise than upon medical, dental, or veterinarian prescriptions, no condition of sale short of the publication on each packet of medicine of the name and quantity of each of its constituents should be permitted.

2. That the label should be made to constitute a warranty, and that false description, whether on the label or main advertisement, should be made an offence.

3. That the provisions of the Sale of Food and Drugs Acts should be applied to proprietary medicines. It was further recommended that a copy of the resolution should be sent to the Prime Minister, the Secretary for Scotland, the Board of Agriculture and Fisheries, and the Local Government Board for Scotland.

Mr. ALEXANDER WYLLIE, of Cordale, Renton, moved the adoption of the recommendation, with the addition that the report be sent to the Local Government Board for England, the Association of County Councils in England, and the Society of Medical Officers of Health in England. The administration of these Acts (we quote from the report in the *Scotsman*), he supposed, cost the country over £10 000, but it was well spent money, for it prevented a considerable amount of adulteration; but there was a gigantic trade done in secret remedies, commonly known as quack medicines, which the Act did not touch. He found that the stamp duty on packets of medicine in 1889 was £266,000, and in 1908 £334,000, and the cost to the public over three and a quarter millions. The most exorbitant prices were charged. The British Medical Association had had exhaustive analyses made of these medicines, as the result of which it was revealed what was charged to the public at 1s. 1½d. cost the thirtieth part of a farthing. Not only were the public being swindled, but many of the component parts of these medicines were deleterious, and often diseases which could easily have been tackled by medical science in their earlier stages became chronic and incurable owing to the use of quack remedies. Great Britain was very far behind other countries. There was complete prohibition in some countries on the Continent, and restriction in others, and our own colonies were following that example. Farmers were prosecuted for having a little additional water in their milk, yet under the present legislation the swindling patent medicine vendor, who was living in luxurious style upon his ill-gotten thousands, was allowed to go free. A county council had to prosecute the grocer who had a little margarine in his butter, but could not touch the medicine vendor who used margarine as a component of the most deleterious compounds sometimes. It was high time the Legislature were taking action in the matter, but it was evident the Government would not do so without considerable pressure.

Mr. WM. SMITH, Balzeordie, Brechin, seconded, and the resolution was unanimously agreed to.

MOTOR CARS FOR MEDICAL MEN.

A NEW SPRING TYRE.

A NEW tyre invented by Dr. Calantarients, of Scarborough, aims at securing all the desirable qualities of the pneumatic tyre without its drawbacks, and at offering some special advantages of its own. Its construction is as follows:

(1) A number of curved plates or springs are mounted round the rim of the wheel about ½ in. apart; each has a clear resilient length of about 5 in., and bears at its end (which is about 2½ in. away from the rim) a rubber block to make contact with the surface of the road. (2) Two circular springs of the same diameter as the entire wheel and tyre are placed parallel to one another within the grasp of the before-mentioned small springs in such fashion that these rest their ends upon them and are supported by them.

There are thus two sets of springs, one circular and the other radial, and it is the relation between them which forms the essence of the invention. The pressure which is exerted by the weight of the car on such of the small springs as are for the moment in contact with the ground is distributed by the circular springs over the whole of the rest of the small springs, these latter being pressed outwards by the circular springs when their fellows in contact with the ground are pressed inwards by the weight upon them. Any undue depression of the lowermost springs is thus prevented.

It is stated that when such a tyre is fitted to a car weighing one ton in addition to the weight of a full load of passengers, the total depression of such of the springs as are in contact with the ground is only about ½ in. when the car is running on a smooth road. There is thus about 2 in. of possible depression still available for any unevenness of road surface which may be encountered. It is claimed that, as the ordinary working range of the springs is only a fraction of their possible resiliency, they will not be liable to deterioration or damage. The weight of this type is stated to be about the same as that of an ordinary pneumatic tyre of the same resistance.

SCIENCE NOTES.

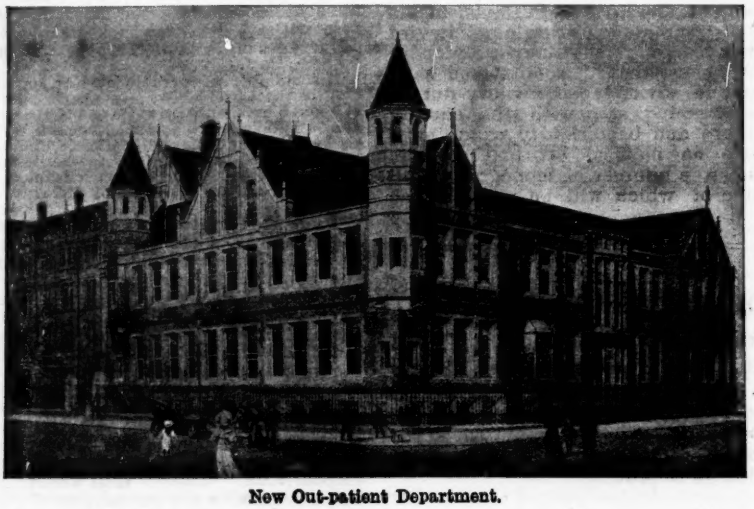
AT Trent, in the Austrian Tirol, there exists an institution, unique in its way, which has been doing remarkably good work during the past few years. Its object is the scientific culture of the silkworm, and it has attained a very fair measure of success. The decline in the silk industry in France was for many years lamentable; it was due to a very large extent to the ravages of parasites affecting both the plants and the moths. Local attempts to eradicate these scourges were in numerous cases unavailing, owing to the imperfect nature of the preventive measures. It is more than twenty years since the idea originated of having some place where a thoroughly healthy stock of silkworms could be reared under continuous supervision, and where the introduction of any diseased condition could be detected and promptly dealt with. It was with this purpose that the Bacological Institute of Trent was founded in 1882, and how well it has succeeded may be gathered from an article by H. Rousset in *La Nature* (February 11th). Since its foundation the institute has greatly increased in size, and it now employs a staff of over 300 workers. Supplies of silkworm moths are obtained from various quarters, and when the moths have deposited their eggs they are examined microscopically. In suspicious cases the progeny is rejected, and only the most healthy eggs are retained. The eggs are carefully preserved throughout the winter, and in the spring they are allowed to develop. Each ounce of eggs produces nearly 150 pounds of cocoons. The institute further conducts researches on the selection of the silkworm moth, and on the best methods of rearing it, with the object of procuring hardy strains and particular varieties. It also gives instruction in the technique to those interested. We have undoubtedly here another striking instance of the advantages to be derived from the application of scientific knowledge and methods to an industrial process.

UNDER the will of the late Mrs. Fanny Maria Kemp, of Pangbourne, Westminster Hospital receives a bequest of £2,000 for the maintenance of a bed to be known as the "Sir Benjamin Baker Bed," and the Royal Berkshire Hospital £1,000.

LIVERPOOL ROYAL INFIRMARY.

NEW OUT PATIENT DEPARTMENT.

AN important development in the work of the Royal Infirmary took place on March 29th, when the new out-patient department was formally opened by the Earl of Sefton, who was accompanied by the Countess. A large and influential gathering of leading citizens assembled by invitation to witness the ceremony. Sir ARCHIBALD WILLIAMSON, Bart., M.P. (the new President of the Royal Infirmary), occupied the chair. The medical profession generally, as well as the medical and nursing staff of the infirmary, was well represented, and the balcony was lined by students.



New Out-patient Department.

The RECTOR having opened the proceedings with prayer,

MR. RALPH BROCKLEBANK said that this was a red-letter day, when the fulfilment of ideas, wishes, and schemes so long cherished was celebrated. He considered the work most creditable to all who had been concerned in it. Nothing had been spared to make the new out-patient department efficient, to secure economical working, and to fulfil its primary essential object—the relief of the sick and suffering. It was a handsome and artistic building, and had this redeeming feature—it was practically paid for, certainly if the ratepayers sanctioned the gift the Corporation sought to make. All interested in the undertaking—committee, medical staff, architect, and contractors—had worked together in perfect harmony.

Mr. HOLFORD HARRISON, the honorary treasurer, stated that when the foundation stone was laid in July, 1909, by the Earl of Derby, the cost of the building had been provided, but a maintenance fund would be necessary; to this end £18,500 had been provided towards the sum of £25,000 which was required.

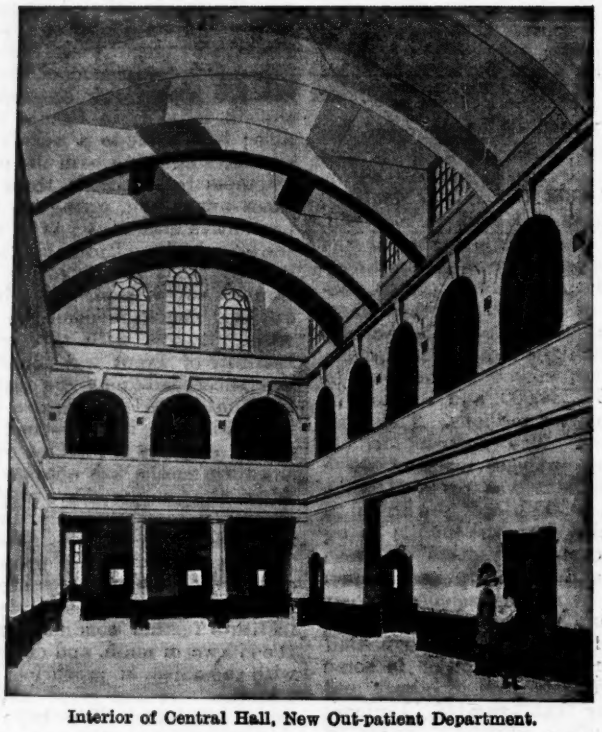
The EARL OF SEFTON then declared the building open, after unlocking one of the doors, and was afterwards presented by the Chairman with a gold key as a memento of the ceremony. Lady Sefton was presented by Miss Williamson with a beautiful bouquet. Lord Sefton, in declaring the building open, expressed his pleasure that he should have been asked to perform the ceremony during his year of presidency, and asked for generous and constant help towards the maintenance of the department.

Mr. EDMUND OWEN referred to the interest which he had in the Royal Infirmary, engendered by his friendship with the late Sir William Banks, of whose memory he spoke in kindly and well-chosen words. When he was first shown over the infirmary by Sir William Banks many years ago, he thought that it was the acme of hospital construction. He considered that, after seeing the new building, the last word had been spoken in connexion with out-patient departments. He touched upon the necessity of thrift amongst the artisan classes. He also spoke of the necessity of an almoner's department in such institutions as a check to hospital abuse, and was pleased to see that special arrangements existed to this end at the Royal Infirmary. He objected to any system of "subscribers' letters." He considered an out-patient department essential to any great scheme of teaching, and that it should also constitute a consultation department, to which outside medical gentlemen could bring cases for discussion. He spoke pleasantly to the students, and also of the Royal sympathy with hospital work.

The LORD MAYOR proposed, and Sir WILLIAM H. TATE seconded, a vote of thanks to Lord and Lady Sefton, which was graciously acknowledged.

Mr. PAUL moved a vote of thanks to the Chairman, and paid a high tribute to the nursing staff of the institution. Dr. BRADSHAW seconded the motion, observing that their President would always have the interests of Liverpool at heart.

Sir HENRY BURDETT supported the motion. He was convinced that this hospital was distinctly the best in the North of England, and presented an example to all voluntary hospitals. In short, the Liverpool Royal Infirmary was a noble example of the voluntary charity of which all were proud. He considered the new building worthy of all praise.



Interior of Central Hall, New Out-patient Department.

The CHAIRMAN, in responding, acknowledged the aid given Mr. Brocklebank and Mr. Bickersteth in the development of the new department.

Before leaving, the company partook of refreshments and inspected the building. Mr. Clayton's band played selections of music.

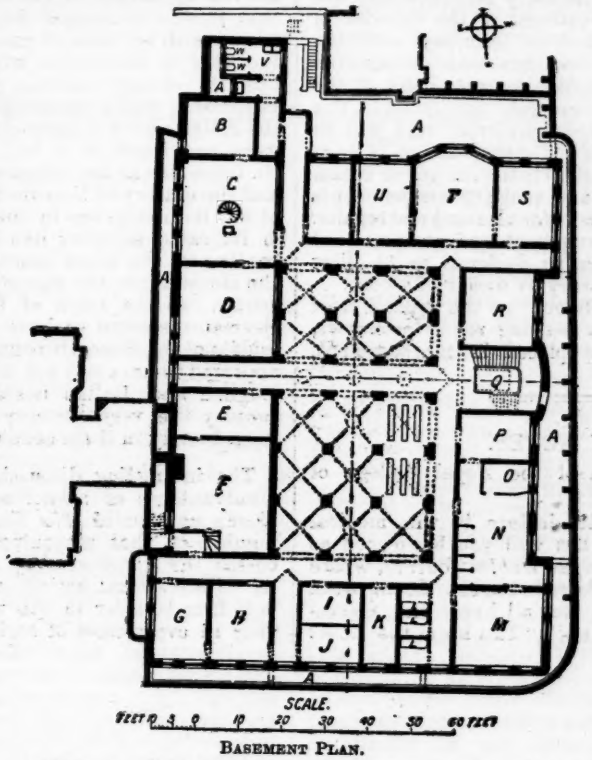
The average number of out-patients for the ten years ending 1890 was 8,064; 1900, 12,527; 1910, 20,741; while the total attendances given now exceed 80 000 a year. Under the methods of investigation which are carried out it may fairly be asserted that only deserving cases are treated and that little abuse exists.

It had been apparent for some time, both to the committee and the medical staff, that improved accommodation was essential. How best to carry this out had been long under consideration, but at last the financial and other difficulties have been overcome. With the aid of the William Mitchell Banks memorial fund the site was acquired, and the gift in memory of the late E. R. Bickersteth and other generous contributions

justified the committee in proceeding with the building and its equipment at a cost of about £30,000.

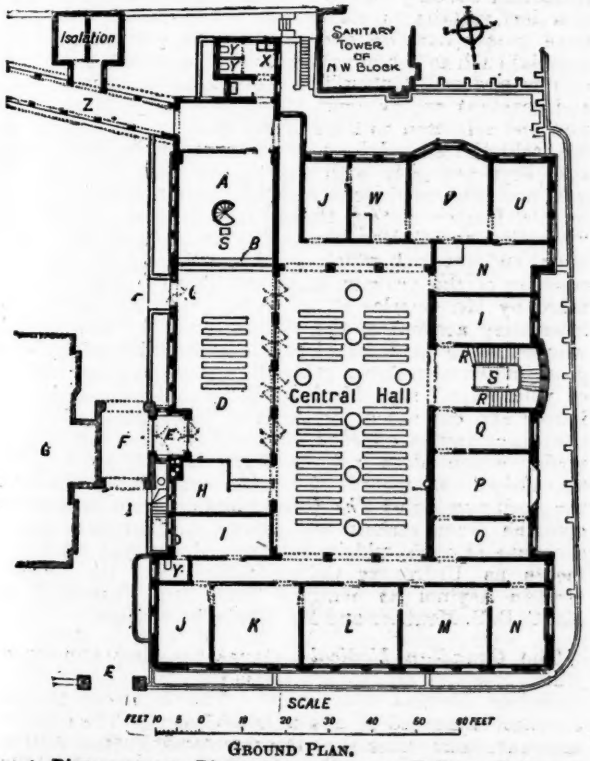
Description of the New Out-patient Department.

The building has been placed at the north west corner of the site of the hospital, at the junction of Pembroke Place and Brownlow Street, being approached from Pembroke Place through the existing gateway for out-patients to an archway under the end of the administration block, which forms a *porte cochere* from which there is a doorway into the entrance hall for unsorted patients. At the north end of this entrance hall, on the right hand side, is the registration office, a door from which leads into the central hall, a spacious apartment, lighted from above, where there is accommodation for 200 persons, and there patients will wait until admitted to the medical and surgical examination rooms. At the south end of the central hall is the medical department, away from traffic noises. The surgeons' rooms occupy the north end. On the west side of the central hall is an operating room with accessory apartments, and a retiring room for nurses. At the south end of the entrance hall is the "dispensary," with a serving counter, which the patients will pass on leaving the hall. This dispensary is large, and will serve the dual purpose of supplying not only out-patients but the whole hospital with medicines. An electric lift from the basement to the first floor is provided in the "staircase." There is a "covered way" to the main building from a passage behind the dispensary, which will act as an entrance to a casualty department, to which use part of the former out-patient department will be devoted. On the south side of the covered way are two small rooms for the temporary isolation of infectious cases which may be detected in the examination of patients. On the first floor are accommodated the "throat department," on the east side; the "ophthalmic department" on the north and west sides; and the "gynaecological department" on the south side. In the basement are the departments for skin, lock, and massage cases; also the dispensary, laboratory, wine and drug stores, with a stairway to the dispensary above. There is an excellent clinical laboratory on this floor. There is a chamber for the boilers warming the building and supplying hot water, and another for sterilizing patients' clothes.



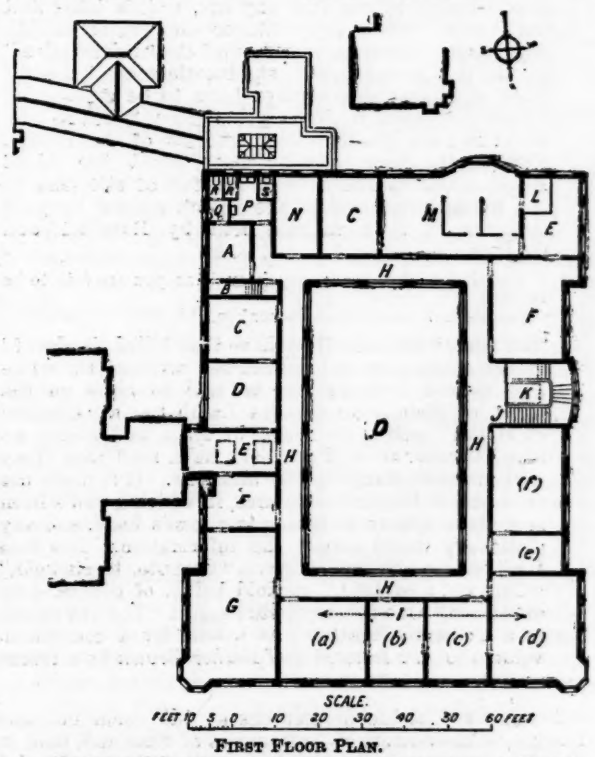
BASEMENT PLAN.

A, Area. B, Wine and spirit store. C, Dispensary laboratory. D, Drug store. E, Sterilizing. F, Heating chamber. G, Masseur (men). H, Masseuse (women). I, Men's waiting room (masseur). J, Women's waiting room (masseuse) K, Masseuse retiring room. L, Bath. M, Skin examination room. N, Skin consulting room. O, Private examining room. P, Skin preparation room. Q Lift. R, Clinical room. S, Women's waiting room. T, Lock consulting room. U, Men's waiting room. V, Toilet. W, W.C.



GROUND PLAN.

A, Dispensary. B, Dispensing counter. C, Exit. D, Entrance hall. E, Entrance. F, Porte cochere. G, Administration block. H, Registration. I, Doctor's retiring room. J, Women's preparation room. K, Women's dressing room. L, Surgeon's room. M, Men's dressing room. N, Men's preparation room. O, Anaesthetic room. P, Operating room. Q, Recovery room. R, Staircase. S, Lift. T, Clinical room. U, Men's examination room. V, Physician's room. W, Women's examination room. X, Toilet. Y, W.C. Z, Covered way to hospital.



FIRST FLOOR PLAN.

A, Nurses' retiring room. B, Store. C, Recovery room. D, Throat operating room. E, Preparation room. F, Waiting room. G, Throat examination room. H Gallery. I, Eye department. (a) Operation room; (b) Special case room; (c) General consulting room; (d) Eyesight testing room; ; (e) Mydriatic room; (f) Dark room J, Staircase. K, Lift. L, Sterilizing room. M, Gynaecological examination room. N, Photographic room. O, Upper part of Central Hall. P, Toilet. Q, Lavatory. R, W.C. S, Dark room.

The central portion of the basement, which is arched and groined and lighted from above, is available for waiting and other purposes. Sanitary arrangements are provided on each floor. The treatment of the exterior of the building has been designed in harmony with the existing infirmary buildings. Care has been exercised to secure as much light as possible in every part of the building, and effective and thorough ventilation. The building is constructed of fire-proof materials, and will be lighted by electricity. The interior of the building is lined with glazed tiles in a simple but artistic design of cream and green. All the plumbing and sanitary arrangements are so fixed as to be easy of access for cleaning and repairs. The floors and passages throughout are composed of terrazzo, and in the rooms are so designed as to allow thorough cleansing when necessary by means of a hose.

The room marked "Clinical Room" on the ground floor plan has been changed to a retiring room for nurses, the clinical laboratory being placed in the basement, marked (*).

LITERARY NOTES.

Mr. Victor Plarr (Librarian of the Royal College of Surgeons of England) writes:

> Your notice of my little lecture to the medical librarians was very kind; but will you be so good as to refer to the original in the *Dublin Journal*, where you will see that I referred to the *Latin* word "*cornutus*"? Of course we all know the Shakespearian allusions to "horns" ("The horn, the horn! It is no scorn," etc.), but it is a question whether this *Latin* use of *cornutus* (=cuckold) is at all known to ordinary scholars. It is Middle Latin, which boys do not learn at school, and my point was that the great librarian was trying to catch out his classifying clerks with a Latin usage they could not possibly be familiar with. However, this is a small matter.

Dr. J. Foster Palmer (London) writes:

> Mr. Plarr's statement in relation to this subject, quoted in your interesting review of his paper on the College Catalogue, seems astounding. It is simply inconceivable to me that any one, unless blind and deaf, could travel any distance on "their earthly pilgrimage" without "picking up" the "information" as to the metaphorical signification of "horns." Most of Shakespeare's plays have to be expurgated for drawing-room reading on this account, but no one, as far as I am aware, is ever ignorant of the reason. Two of the most popular plays, *Much Ado About Nothing* and *As You Like It*, are full of allusions to it. In the latter, besides the speech quoted by your reviewer, it is mentioned both by Rosalind and Orlando:
>
> *Rosalind:* Why, *horns*, which such as you are fain to be beholding to your wives for.
> *Orlando: Virtue* is no *horn*-maker.
>
> The song, "What shall he have that killed the deer?" in the same play is meaningless without it, while *Troilus and Cressida* may be said to hang on the horns of Menelaus. Charles Lamb has a "Chapter on Horns" among his *Essays of Elia*, and surely no man, woman, or child can ever have read this essay without understanding the allusions. It is made use of in one of Hogarth's pictures, in which a cow's horn is made to appear to belong to a man's head, and any dictionary would supply the information. The first I picked up (Nuttall's) gives "Cornute, to cuckold," "Cornuto, a cuckold," cuckold being, of course, duly explained. One is tempted to suggest "The Innocence of a College Librarian" as a title for a companion volume to *The Innocence of Father Brown* by a recent writer.

A summary of the proceedings at the usual monthly meeting of the Society of Antiquaries of Scotland, held in Edinburgh on April 10th, is given in the *Glasgow Herald*. From this we take the following abstract of a paper read by Mr. Egerton Beck. He dealt with the history of the Hospital of St. Germains, near Seton, in East Lothian, in which the historians of Scottish monasticism had been able to throw little more light than that it was in existence in the thirteenth century. There were, however, some fifteenth century documents in the Vatican which gave interesting details of its history at that period, showing that it was connected with the See of Bethlehem and served with an order of canons regular of St. Mary or of the Star of Bethlehem, whose presence in Scotland had hitherto escaped notice. The Bishop and Chapter of Bethlehem had possessions, chiefly hospitals, not only in the Holy Land, but throughout Europe, and among these were mentioned in a bull of A.D. 1266 the church of St. Germains in the diocese of St. Andrews in Scotland, and the oratory of New Bethlehem in London. The dress of the Bethlehemites in the case of the London hospital is indicated as being like that of the Dominicans, but bearing on the black mantle, in addition to the cross of the Hospitallers, the star of Bethlehem in red with a blue centre. In the reign of David II the Hospital of St. Germains seemed to have fallen into decay, and by the middle of the fifteenth century the Bishops of Bethlehem appeared to have lost not only St. Germains, but also their English and Italian hospitals, and by the seventeenth century the very memory of the order had completely passed away in these countries.

The interesting discussion upon the advantages and disadvantages of school athletics, which began in the March number of *The Child*, is continued in the April number of that magazine. Mrs. Scharlieb, who discusses the question very fully in her excellent article on "Recreational activities of girls during adolescence," is a firm believer in the value of physical exercise for girls in every class of society, but she lays the greatest possible stress upon the fact that the fundamental differences which exist between the children of either sex call for a corresponding difference in their physical training, and any violation of this law of Nature must necessarily lead to disastrous results. "The idea which *still* exists in the minds of many young people," she writes, "and even in some of their elders, who ought to know better, is that girls should be trained into being somewhat inferior boys, rather than into what is, perhaps, the most admirable work of God, 'the perfect woman, nobly planned,'" and such a belief is infinitely dangerous not only for the women of the present generation but for the future of the whole race. Let girls have proper exercise, and plenty of it, but it should be exercise such as is best suited for their peculiar bodily requirements, and it should be taken under the most careful and constant supervision. When indulged in in moderation and relegated to their proper place in the scheme of life, athletics should be a powerful factor in inculcating both boys and girls with the virtues most requisite for good and efficient citizens, and this opinion is fully shared by Dr. Luther Halsey Gulick in his short article on "Athletics and Citizenship." The immense benefits, both moral and physical, which result from the proper physical training of the growing child are likewise clearly recognized by Mr. Charles E. B. Russell, who contributes an interesting account of the various types of "City Lads" who belong to the different boys' clubs and brigades of our great industrial centres. "To all of these boys, no matter of what type," says Mr. Russell, "organized games, both indoor and out, are of incalculable value, particularly for the opportunities afforded for teaching them fair play, a virtue which does not, as many believe, grow spontaneously." As regards the moral training of children, the April number of *The Child* contains some interesting opinions from various well-known authorities; whilst accounts of such widely differing educational establishments as University College School and the London Orphan Asylum at Watford have been furnished by Mr. C. B. S. Monfries and Mr. Henry S. Armiger.

The *Canadian Medical Journal*, the first number of which appeared on January 1st, is the official organ of the Canadian Medical Association. The *Montreal Medical Journal* is merged in the new periodical. The editorial announcement states that the *Canadian Medical Journal* is intended to be "a medium for the expression of all that is best in Canadian medicine." The editor is Dr. Andrew Macphail, of Montreal. Our new contemporary is well printed, and presents an attractive appearance which is not belied by the quality of the contents. It has our best wishes for its success.

British Medical Journal.

SATURDAY, APRIL 22ND, 1911.

INTESTINAL KINKS AND INTESTINAL STASIS.

THE increasing importance attached to the general effects produced, as is believed, by the continuous absorption of poisons produced within the body, more especially in the intestinal canal, is one of the most striking features of practical pathology as applied to clinical practice in the present day. Metchnikoff, as is well known, regards the colon with grave suspicion, accusing it of being the chief cause why a man does not die a natural death from old age; recently he has endeavoured to establish that the poisonous substances his hypothesis assumes are produced by certain anaërobic organisms which flourish in the colon.

He has found a powerful ally in Mr. Arbuthnot Lane, who, approaching the matter from the clinical side, has distinguished a set of symptoms and physical signs which he believes to be due to the absorption of poisons produced in the contents of the intestine when unduly retained, especially in the colon. The symptom which brings the patient to seek medical advice is abdominal pain, varying in intensity, but usually sufficient to make the sufferer a chronic invalid. Other symptoms are constipation, attacks of abdominal distension, loss of appetite, attacks of nausea often followed by retching or vomiting, and a foul taste in the mouth. Attending on these symptoms are certain others of a more general nature—loss of weight, mental apathy, headaches, defective circulation causing cold hands and feet, and general muscular pain attended by loss of freedom in the movements of the limbs. The physical signs enumerated are abdominal tenderness in certain areas, the site of maximum tenderness varying in different cases, a sallow or brownish tint of the skin, and cystic degeneration of the mamma. In such cases the transverse colon is usually found below the level of the umbilicus, and frequently the whole of the ileum in the pelvis. This particular condition he attributes to adhesions which fasten the gut to the posterior abdominal wall in such a way that it kinks upon itself at an acute angle, and is also often rotated on its longitudinal axis. For the relief of this condition he has devised an operation which consists in implanting the end of the ileum in the most accessible portion of the ileo-pelvic colon—that is to say, if we understand the matter right, into that part of the large gut commonly called the sigmoid flexure. The operation, it has been found, is best performed by making an end-to-side anastomosis. Should pain have been a prominent feature, and should the condition of the patient permit, the colon is removed up to the site of the anastomosis. The operation, it is stated, is attended by very little shock, and the paper by Mr. Chapple published elsewhere, in which he has followed up 50 cases, appears to show that the final results are, in the large majority of cases, satisfactory. In the clinical lecture by Mr. Lane, also published in this issue, he indicates other parts also of the intestine at which adhesions occur, producing kinks in the canal which lead to stasis. Displacement of the caecum, which he irreverently calls "the blind extremity of the cesspool"—the cesspool being the colon—leads to the formation of bands external to the caecum and ascending colon, fixing them, and it may be the appendix also, to the abdominal wall. If the appendix is kinked in this way, the part beyond becomes distended, and symptoms of appendicitis arise. The internal strain in the caecum affects the termination of the ileum and the posterior layer of its mesentery, with the result that the ileum is bent and twisted on itself.

Dr. A. C. Jordan has contributed to the April number of the *Practitioner* a paper dealing with the radiographic demonstration of this obstruction of the lower end of the small intestines, to which American surgeons have given the name of "Lane's ileal kink." He used 5 oz. to 6 oz. doses of pure bismuth carbonate, and, after an experience of over a hundred cases, affirms that this amount, which offers a far better opportunity of detecting abnormalities in the region of the ileum than could be obtained with the customary 2 oz. doses, may be given to adult patients without hesitation. The form of the meal is not important, but it should be so timed that the patient can be kept under observation from the sixth to the twelfth hour. He states that in normal cases the end coils of the ileum either lie in a compact mass in the right side of the pelvis, just below and to the left of the caecum, producing the appearance of a black mass with irregular rounded margins which may be in contact with the caecum, or the last two inches of the ileum rise from the mass, with the result that the ileo-caecal entrance is shown. In cases presenting an ileal kink, he finds that the appearances vary, and explains this by assuming that the kink is formed by adhesions whose position, length, and strength vary in different persons. He also points out that the appearances in any one subject will not be the same on all occasions unless the lower end of the ileum is immovably fixed. The degree of fixation can be ascertained by deep pressure. The patient should be examined in the recumbent position, for in the erect the caecum falls into the pelvis and comes in contact with the ileal coils and so obscures the picture. The radiograms by which the paper is illustrated show the presence of an obstructing kink in the last few inches of the ileum. Brief histories of each case and accounts of the conditions found at operation accompany the radiograms and appear to prove that although the ileal kink may be the predominating condition, it is frequently accompanied by similar obstructions at other points along the alimentary tract. These changes, then, would seem to be manifestations of a condition that affects the whole of the contents of the abdominal cavity. This subject is also dealt with in a beautifully illustrated paper by Dr. C. H. Mayo, of Rochester, Minn., entitled "Intestinal Obstruction due to Kinks and Adhesions of the Terminal Ileum."[1]

[1] *Surgery, Gynaecology, and Obstetrics*, March, 1911.

Mr. Lane also describes a similar strong band of adhesions which may develop at the level of the iliac crest on the right side, binding down the ascending colon and constricting its lumen sufficiently to cause some obstruction at this point. Similar adhesions may, he says, produce kinks at the hepatic and splenic flexures of the colon. He describes also a duodeno-jejunal kink at the point where the lower fixed portion of the duodenum opens into the mobile jejunum and a constriction of the pylorus produced by what he calls the pyloric ligament, practically a band of adhesion formed to resist the displacement of the pylorus produced by the traction of the distended stomach augmented by that of the loaded transverse colon. He looks upon these adhesions as primarily conservative, being formed to resist the displacement downwards of the various parts of the gastro-intestinal tract due to the traction in almost constant operation while the erect or sitting posture is maintained.

Dr. Jordan has also supplied the radiograms illustrating a paper published by Mr. Arbuthnot Lane in the same periodical as Dr. Mayo's article, entitled, "Distension Changes in the Duodenum in Chronic Intestinal Stasis."[2] In this paper he advances radiographic and other evidence in support of his view as to the causation of distension and ulceration of the duodenum. It is, he contends, consequent on the obstruction produced at the end of the third part of the duodenum in the manner indicated in his clinical lecture published this week. The importance of this point in the treatment of duodenal ulcer is obvious. Should it be confirmed, the proper treatment would seem to be to anchor the first part of the jejunum to the posterior wall of the stomach or transverse mesocolon in such a way as to prevent the production of a kink; no communication between the stomach and jejunum would be necessary, and the operation mortality would probably be reduced.

The whole subject is of great pathological interest and of not less clinical importance. It opens up a field of inquiry which for the present it will be for the surgeon to investigate; but though as yet only those cases in which the conditions described have reached an extreme stage may be diagnosed, we may look forward to a time, as experience accumulates, when it will be possible to recognize early stages when symptoms may be alleviated by medical and dietetic treatment and their progress arrested. The prophetic eye may descry a still more distant future: the progress of the medical and surgical study of disorders of digestion may make so much progress that a rational dietetic system may altogether eliminate the causes of the disorders which to-day medicine uncertainly, and surgery in a more drastic manner, seek to alleviate or cure.

THE CONTROL OF MEASLES.

IN a memorandum issued by the Local Government Board[3] Dr. Newsholme, the medical officer of the Board, seeks to indicate some of the more promising methods of controlling measles which are at present available. Dr. Newsholme points out that experience having shown that compulsory notification of other infectious diseases is only effective when a doctor is in attendance on the patient, although a like duty is imposed on the parent, it does not appear likely that attempts to enforce the notification of measles by parents would be more successful than in the case of other acute infectious diseases. Notification to medical officers of health by school teachers and school attendance officers of cases occurring among school children may, however, be of the greatest service if the most prompt use possible is made of the information. Notification by itself has a mere statistical value. Its value apart from this must be judged by the extent and promptitude with which notifications can be followed up by administrative action. Among the more important measures which are rendered possible by notification of cases are improvement in domestic management and treatment of patients, removal to hospital of patients who cannot be efficiently treated at home, arrangements as to exclusion from school, and as to cleansing and disinfection of rooms when required. The difficulties attending the efficient following up of cases which come to the knowledge of the medical officer of health are clearly stated in the memorandum. Foremost among them is the fact that outbreaks of measles are explosive in character and a considerably increased staff may be required during a few weeks. This will necessarily mean an increased expenditure, but if wisely directed, such expenditure will be more than justified.

"A tactful inspector, health visitor, or nurse will be able to secure increased and more intelligent care and an improved prospect of recovery for the patient, as well as a diminution in the occasions for spread of infection. Gradually it will become realized that measles for children under 5 years of age is a deadly disease; and the co-operation of all concerned in the work of prevention and treatment will ensure that in connexion with each patient adequate precautions are taken to prevent the spread of infection, and to obtain for each patient the best possible treatment."

On the question of exclusion from school attendance Dr. Newsholme points out that if by any means at present available the amount of measles occurring in large towns among children who attend infant schools were to be reduced, a somewhat corresponding increase would be likely subsequently to occur in the number of cases in the higher departments. He admits, however, that this consideration does not justify the failure to adopt means for reducing the incidence of measles among young children, for by the postponement of the age of attack there would, at any rate, be a saving of many lives.

In connexion with this memorandum it is of interest to recall the comments made by Sir Richard Thorne in 1896 upon Dr. Theodore Thomson's report to the Local Government Board on measles in England and Wales.[4] In those comments it was stated that where compulsory notification of measles was followed by prompt and systematic visitation this served to give a clue to the existence of unreported cases. It was pointed out that where knowledge thus acquired was supplemented by information derived from school authorities and properly utilized; where, in inter-epidemic periods or during stages before epidemics had passed beyond control, measures were adopted with a view to isolation and disinfection; and where judicious restrictions were imposed on attendances at elementary schools, much more was to be looked for in the control of measles than had hitherto been attained.

[2] *Surgery, Gynaecology, and Obstetrics*, March, 1911.

[3] To be obtained directly or through any bookseller from Wyman and Sons (London), Oliver and Boyd (Edinburgh), and E. Ponsonby (Dublin). Price 1d.

[4] Annual Report of the Medical Officer of the Local Government Board for 1894-95.

ELECTION OF DIRECT REPRESENTATIVE.

As will be seen from a letter published elsewhere in this issue, Dr. J. A. Macdonald, of Taunton, who succeeded Sir Victor Horsley as Chairman of the Representative Body, and is now Chairman of the Council of the British Medical Association, has accepted an invitation to come forward as a candidate at the approaching election of a Direct Representative of England and Wales on the General Medical Council. The election of Dr. Macdonald to the important offices in the Association above mentioned was entirely due to the aptitude for public business which he showed during the reorganization of the Association, as a member of the Representative Body, and as a member of various committees. He has been chairman of the Medico-Political Committee, and is now chairman of the Special Poor Law Committee. He has therefore a wide and intimate knowledge of the needs of the profession, and is well acquainted with the nature and limitations of the powers of the General Medical Council. The other candidate is Mr. George Jackson, of Plymouth, who has already served one term (1902–7) as a Direct Representative. He has represented the Plymouth Division on the Representative Body continuously since it came into existence. His address will be found in our advertisement columns; and a letter from Mr. George Brown, formerly his colleague on the General Medical Council, commending his candidature, is published elsewhere.

THE MEDICAL ASPECTS OF LIFE ASSURANCE.

IN an address given recently to the Faculty of Actuaries on the expectation of life in circulatory disease,[1] Dr. G. A. Gibson of Edinburgh, after carefully considering the various points to be remembered in estimating the importance, from the standpoint of a medical examiner, which attaches to each type of cardiac lesion, said: "The conclusion of the whole matter seems to me to lie in the conception that, for the present at least, we have no better guide in the selection for assurance of proposers suspected of some circulatory disorder than the ordinary methods of diagnosis and prognosis employed in practical medicine. After all, the decision in each case must be a matter of trained common sense." Dr. Gibson's paper does not, perhaps, contain anything which would be altogether new to a medical reader; none the less, it is worthy of high commendation, and its form and style might well serve as a model for those members of the profession who have to address an educated lay audience upon medical topics. Anyone who has examined a number of such writings cannot but realize the difficulty of avoiding the Scylla of extreme technicality without being engulfed in the Charybdis of dogmatic affirmation, the Sir Oracle style which is offensive to most cultivated persons. One or two matters raised in the discussion seem to call for comment. Two non-medical speakers made use of language with regard to medical examiners for life assurance which stands in need of considerable qualification. One gentleman, for instance, gave utterance to the following remark: "Nor are we officials always too well served by the medical officers we are obliged to employ throughout different parts of the country. On the one hand we have men of the eminence of Dr. Gibson, from whom nothing but satisfaction is to be expected; but on the other hand we have such men as a Hibernian medical officer in a remote part of the country, who evidently possessed sufficient second sight, and certainly astuteness, to be able to fill up and complete a medical report form—signature and all—on the life of a man that he had not examined!" Even assuming the "Hibernian medical officer" not to be a near relative of Mrs. Harris, it appears to us that the words quoted convey an implication at once uncalled for and untrue. A far more valuable contribution to the debate was the suggestion that a central bureau should be established with the object of utilizing the collective experience of the different life offices. We sincerely trust that some such plan may be adopted, for too little use has so far been made of the valuable medical statistics which have accumulated. With comparatively little expenditure of money and effort, these records could, in a form not leading to any breach of confidence, be placed at the service of the medico-statistical inquirer.

[1] Printed, together with the ensuing discussion, in the *Transactions of the Faculty of Actuaries*. Vol. v, Part vi. London: C. and E. Layton. 1911.

THE SURGICAL TREATMENT OF GASTRIC HAEMORRHAGE.

OWING to the difficulty experienced in finding the bleeding point, many surgeons have renounced interference in ordinary cases of haemorrhage from gastric or duodenal ulcers or restrict themselves to the performance of gastro-enterostomy, yet, where bleeding is persistent or recurrent and grave, surgical intervention is imperative, and excision of the ulcer or ligature of the bleeding vessel, if it can be found, is the practice of most surgeons who have had experience in this work. Professor Armstrong of Montreal has recently[1] reviewed the cases he has treated since he reported a successful instance at the meeting of the British Medical Association in 1899. He teaches, as the outcome of his experience, that when the bleeding is small and repeated at short intervals the surgeon should operate, but he does not agree that it is sufficient to perform gastro-enterostomy, as the bleeding may continue and the patient die. He quotes, in support of this statement, the published experience of Schluessler, Quenu, Kroenlein, Porges, Potherat, Delbet, Tuffier, Kocher, Dollinger, and Hartmann, and Quenu's estimate of 25 per cent. mortality of the cases so treated. He believes it to be advisable only where the bleeding point is near the pylorus or in the duodenum, when, by lessening peristalsis, it may "give rest to the stomach and allow time for clotting in the bleeding vessel." But even when the pylorus is narrowed gastro-enterostomy is not always successful (Schluessler Eiselsberg), and the natural surgical proceeding is to try to close the bleeding point, either by the cautery if there is merely capillary oozing or by ligature, which may be applied directly to the vessel by passing a curved needle under it, not necessarily drawing it so tight as to rupture the coats of the vessels on account of the friability of the tissues, or by tying on both sides of the bleeding point (Roux). Excision of the ulcer should be reserved for exceptional cases on account of the loss of time and blood. Where the bleeding point cannot be found, he recognizes the difficult position in which the surgeon is placed, but so far he has not met such cases; if he did he would be inclined to do a pyloroplasty in order to lessen peristalsis and prevent any considerable degree of stomach distension. He mentions the use of the gastroscope through an incision in the wall of the exposed stomach, as suggested by Rovsing of Copenhagen. But he has had no experience with it, although he thinks it deserving of trial as likely to prove useful. He quotes the statistics published by Boraszecky, Finsherer, and Kraft, which distinguish the results of gastrotomy, gastro-enterostomy,

[1] *The Canadian Medical Association Journal*, February, 1911, p. 103.

cauterization, excision, and ligature when employed for the arrest of haemorrhage. These show a diminished mortality in the order given, but the conditions for which the operations were performed are not distinguished, and as Professor Armstrong suggests, it is probable that operations for small repeated bleedings would show better results than emergency operations on patients vomiting large quantities of blood. He gives brief notes out of his own nine cases, with one death from "pulmonary thrombosis," in which case he had ligatured a bleeding vessel, cauterized two other ulcers, and performed pyloroplasty. The number of cases he has been called upon to deal with is not large, and this may account for his not having met with instances in which he failed to find the source of bleeding, but he may be congratulated on his excellent results.

MOSQUITOS AND MALARIA.

THE JOURNAL of February 18th last contained a notice of a memoir by Mr. H Waite published in *Biometrika*, dealing with the factors which determine the prevalence of malaria. As was stated at the time, attention was mainly devoted to the method employed by Mr. Waite, and the validity of the biological assumptions did not come within the scope of our remarks. The second number of *Paludism*,[1] a publication issued by the Central Committee for the Study of Malaria in India, contains a review of Mr. Waite's essay, in which the reviewer, while according high praise to the method adopted, and stating that in his opinion it should be mastered by all who make malaria their special study, questions the biological postulates. It is objected that certain values assumed in determining the number of infecting *Anopheles*—values which were used by Mr. Waite on the authority of Major Ross—are too small. It is also argued that to assume that on the average each infecting mosquito will bite one, and only one, person is inconsistent with well-established facts. We think it right to mention these criticisms, which will no doubt be discussed by those whose first-hand knowledge of the biological facts renders their judgement of importance. In the meanwhile we may point out that the value of Mr. Waite's research must not be estimated by the opinion formed as to the validity of the assumptions he used. It is no doubt frequently argued that the tentative character of the assumptions upon which much medico mathematical work is based deprives this line of inquiry of its claim upon attention, but mathematical inquiries are often the most potent instruments for the testing of assumptions, since in this way the real consequences of the postulates are made apparent. Indeed we might almost venture on the paradox that quantitative work based on false postulates may, by stimulating biologists and field workers to a closer scrutiny of the facts, sometimes lead more certainly to the discovery of truth, than non-quantitative investigations resting on impeccable foundations. Needless to say, we do not by these remarks commit ourselves to any expression of opinion as to the matter in dispute, which can only be decided by special expert inquiry.

RAT FLEAS.

IN December last,[2] in view of the plague outbreak in Suffolk, we drew attention to the desirability of a more thorough knowledge of the animal parasites of rats, and in particular their flea parasites. Since then three contributions have been made to the subject by well known authorities. The first of these is from Mr. A. E. Shipley.[3] He gives a short summary of the life and structure of a typical flea, and draws attention to the fact that it is much easier to destroy fleas as larvae than as adults. The larvae are much less tolerant of adverse circumstances than the full-grown fleas, but when left undisturbed they flourish exceedingly; they may frequently be found in enormous numbers in uninhabited houses. About two dozen different species of fleas have been found on rats at one time or another, but many of these are only occasional or accidental parasites of that animal. They belong to the two families, *Pulicidae* or true fleas, and *Sanopsyllidae* or jiggers; the latter live only in warm climates, and none have been discovered in this country. Of the true fleas by far the commonest rat parasites are *Xenopsylla cheopis* and *Ceratophyllus fasciatus*, the former of which is met with only in warmer countries, although its discovery has been twice recorded from this country. *Ceratophyllus fasciatus* flourishes in temperate climates. The question whether *Ceratophyllus*, like *Xenopsylla*, may bite human beings and so be an agent in the transmission of plague has been thoroughly investigated by Miss Chick and Dr. C. J. Martin,[4] and their extensive series of experimental observations have amply confirmed the previous work of Gauthier and Raybaud. The fleas were removed from rats and starved for periods varying from one to fourteen days. They were placed singly in test tubes which were inverted on the arm of the observer and allowed to remain for a space of two minutes. During this time the fleas were closely watched and their readiness to bite was noted. In a series of over 500 such experiments the fleas bit in more than 300 cases, so that a positive result was observed in 60 per cent. A series of 100 similar experiments with a rat gave an almost identical percentage of positive results. The further experiment was tried of removing a rat from a flea cage, and after the lapse of four days placing the hand and bared arm into the cage for two minutes. In practically every case the fleas attacked the arm, and in one as many as eighteen fleas did so. It was found, moreover, that they would do so even when a rat was present not more than 6 in. away. From their scope and thoroughness these experiments may be regarded as effectually settling what has hitherto been a matter of some dispute. The bite of the rat flea is not usually followed by irritation or swelling, but in some cases the effects are very marked, and last for several days. To complete the inquiry, similar experiments were performed with *Ctenopsylla musculi*, the mouse flea, and *Ctenophthalmus agyrtes*, a flea common on field mice. It was found that the former would bite man, but only with great reluctance. The positive results formed less than 4 per cent. In the case of *Ctenophthalmus*, the results were entirely negative. From these observations the authors come to the conclusion that *Xenopsylla cheopis* and *Ceratophyllus fasciatus* are the rat fleas which, when hungry, will bite man readily, and there is no reason to suppose that *Ceratophyllus fasciatus* would not be as efficient an agent in the transmission of plague from rat to man as *Xenopsylla cheopis* has been shown to be in India. In another contribution,[5] Martin and Rowland have shown that on rats living in the open in Suffolk and in rats' nests in Suffolk and Herts the species of fleas found are exclusively *Ceratophyllus fasciatus* and *Ctenophthalmus agyrtes* in about equal proportions. The common occurrence of the latter flea on rats must be regarded as due to their close association with field mice.

[1] *Paludism.* Being the Transactions of the Committee for the Study of Malaria in India No. 2. January, 1911, pp. 113-117. Simla, 1911.
[2] BRITISH MEDICAL JOURNAL, December, 1910, p. 1873.
[3] *Journal of Economic Biology*, February, 1911, p. 12.
[4] *Journal of Hygiene*, March, 1911. p. 122.
[5] Appendix to Report of Medical Officer to Local Government Board, 1911.

THE "SLIMNESS" OF A MEDIUM.

HYPNOTISTS sometimes fail and mediums are sometimes found out. In the case of the latter much ingenuity worthy of a better cause is often displayed in explaining away the exposure. One of the neatest examples we have come across is related by Dr. J. Raimond in a long-way-back number of the *Gazette des Hôpitaux*. A sceptical friend, he says, was present at a "magnetic" performance. Pressed by the lady of the house to ask the medium some questions, he requested him to direct his attention to a small house in the Pyrenees; this he invited him to describe. The medium after going through some of the mystical sawings of the air thought necessary for these purposes, described a house. The description was fairly correct, a fact not marvellous in itself inasmuch as one small house in the Pyrenees is very like another. The sceptic proceeded to question the operator further, asking him to inform him what his father had been about that day. The seer answered: "I see your father at a great distance from here," and he went on to narrate from hour to hour what the old gentleman had been doing during the day, entering into the most minute particulars, and ending: "And now he is laid comfortably in a bed of such and such a fashion." The whole party listened with rapt attention to the narrative, and at the end of it looked to the sceptic to see whether the medium was correct. He said quietly to the medium: "There is only one slight error in the description. My father has been dead these twenty years." The medium, taking him by the arm, said significantly, "Sir, I cannot admit this objection as valid. *It is a wise child that knows its own father.*" The sceptic thus hopelessly routed had to beat an ignominious retreat pursued by the Homeric laughter of the company.

DENTAL PROPHYLAXIS.

WE have received from the trustees of the Forsyth Dental Infirmary for Children, Boston, U.S.A., a pamphlet setting forth their tentative plans. The infirmary is to be erected and endowed by Messrs. John and Thomas Forsyth, in memory of their two brothers. A site of 51,000 square feet has been bought in one of the best parts of Boston, and about a million dollars have been set aside to endow the institution. Prophylaxis is the great object, and the criticism and co-operation of the profession are invited. The institution is to be devoted to the care of the teeth of all deserving children under the age of 16. It is not to be looked on as a charity, since the right of children to develop physically at the public expense is becoming equally recognized with the right to mental development. No artificial work is to be done. There is to be a consulting staff, a visiting staff, and a permanent whole-time staff, and students of authorized dental schools are to assist in the work. There will be a museum and a research laboratory, and already a Research Fellow has been elected. In the lecture-room, capable of seating 250, popular lectures on dental hygiene are to be given. By this means, and by the teaching of the children, it is hoped that the importance of early dental treatment and prevention will be taught. The building is to accommodate over 100 chairs on the top floor, and the trustees aim at making the surroundings as attractive, and the period of waiting as little irksome as possible. To this end the building is to be almost palatial, and is to stand in a well laid-out park. Details of plans are difficult to criticize, but the general conception is sound, although it might be suggested that the anaesthesia rooms are inconveniently remote from recovery rooms, and that the space given to the plaster-room is too small.

FAME.

THOUGH fame, like truth, is difficult to define, no one, perhaps, would be disposed to quarrel with the words "A Roll of Fame" as a heading for a list of those on whom the City of London has conferred the status of honorary freeman or to whom it has presented complimentary addresses. Such a list is to be found in the *City of London Year Book* for the current year, and indicates that the earliest year in which the honorary freedom was conferred was 1757. The first few recipients were more or less well-known statesmen, beginning with the first Pitt. Then the names of soldiers and sailors vastly outnumber all others for some eighty years, hold their own for another thirty, and in the past fifty years fall decidedly into a minority. The tendency, in short, has been towards greater recognition of civil merit. This is shown not merely by the preponderance of civilian names in the later years, but by the absence from the list of sundry naval and military men whose services have been quite as conspicuous as those of some of the officers who figure in the early part of the list. Apart from the fighting class, the list as a whole is mainly representative of statesmanship, philanthropy, and the legists. Indeed, other roads to fame are so sparsely represented that the medical profession must consider itself fortunate in finding among the total of 178 names two which are entirely its own—those of Edward Jenner, which appears under date 1803, and Lord Lister, 1907. But there are some four other entries possessed of a certain medical interest—Sir Jamsetjee Jeejeebhoy, 1855, whose name is familiar to most medical men as the founder of the great hospital in Bombay; David Livingstone, 1857; Dr. Jameson, of South Africa, 1907; and last, but not least, Florence Nightingale, 1908. Science other than medical science seems represented only by the names of Sir George Biddell Airy and Sir Henry Bessemer. The list as a whole contains very few names with which most persons of ordinarily good education would not be familiar, and this would seem to connote wisdom in selection on the part of the City Fathers.

MALARIAL WORK IN JAMAICA.

ATTACHED to the official *Jamaica Gazette* is a bulky supplement setting forth the work done up to the end of 1910 by the Malarial Commission appointed in the previous year. The greater part of the report is occupied by reprints of letters which have passed between the Commission and various persons, the real report being confined mainly to a description of the programme which the Commission set before itself. One outcome of the appointment of the Commission would appear to be that the Government is overhauling the whole of the sanitary organization of the island, has obtained the passage of a Health Act, and is recommending all parochial councils to appoint a medical officer of health in the person of the medical officer of the district, and to increase his salary accordingly. For the rest, the energies of the Commission have been devoted to making and giving effect to arrangements for educating the public on the subject of malarial infection and how it may be avoided, in giving specific courses of instruction to sanitary inspectors in methods of destroying the breeding places of mosquitos, and in urging on local authorities the propriety of preventing the accumulation of waste water, and of taking other like measures. In addition, quinine has been placed on sale at all post-offices in farthing packets, containing a dose sufficient for a grown person, and notices are exhibited recommending that all persons living in malarial

districts should take each week not less than three doses on alternate days. A description of the benefits obtained in other countries by a like course is included. It also appears that Dr. Prout after analysing the hospital reports of the colony estimated that the actual pecuniary cost of malaria to the island was £6 400 for hospital treatment alone, quite irrespective of the economic loss resulting from sickness at home and the diminished efficiency of workers. Spot maps have also been prepared showing the principal breeding places of mosquitos in different malarial centres, and many have been dealt with. Malarial fever does not appear to be universally prevalent throughout the island, but that it must have a very serious effect on the public health is abundantly evidenced by an endemic index obtained by examining all the school children in certain parishes. As judged by the existence of enlarged spleen and parasites in the blood the percentage of children suffering from chronic malaria ranges from 13.1 in Falmouth and 16.7 in Spanish Town, to 37 9 in St. Ann's Bay, and 45.5 in Annotto Bay and Black River.

THE RANGOON DUFFERIN HOSPITAL.

In the issue of the British Medical Journal for November 14th, 1903, attention was drawn to the inexpediency and danger of admitting cases of general diseases, many of them of an infective character, into an institution originally intended, and largely employed, as a lying-in hospital and training school for midwives. This objectionable practice has now been discontinued. Under the advice of a committee of local medical men the Lieutenant-Governor of Burmah, Sir Harvey Adamson, and the managing committee of the hospital prohibited from the beginning of 1910 the further admission of general cases, a step which has now been approved by a general meeting of the subscribers of the Burma Branch of the Countess of Dufferin's Fund. Apart from the reasons mentioned above, which rendered this measure wise, the opening of a large new general hospital in Rangoon, in which special arrangements exist for the treatment of females, has rendered the use of the Dufferin Hospital for the treatment of general cases unnecessary, and has enabled the managing authorities of the institution to allow it to revert to the purpose for which it was originally established—a purpose which the Countess of Dufferin declared, after visiting Burma, to be peculiarly desirable, owing to the barbarous customs connected with childbirth prevailing in that province.

A FORGOTTEN NATURALIST.

In volume xvi of the *Essex Naturalist*, the organ of the Essex Field Club, Mr. Miller Christy publishes an interesting biography of Dr. Benjamin Allen, of Braintree, a forgotten Essex naturalist and physician. Dr. Allen was one of three friends deeply concerned in all matters connected with natural history—indeed one might say with all branches of knowledge. The second was Samuel Dale, another physician and apothecary of Braintree. These two men were, however, quite eclipsed by the third member of the trio, who was none other than the distinguished John Ray, "the father of modern natural science." The published and unpublished works of Allen, and the fact that he was on terms of great intimacy with Ray, prove that he was a man of considerable scientific attainments and wide sympathy, and Mr. Christy has placed all naturalists under a debt of gratitude in thus rescuing the name of Allen from oblivion, for, as the writer points out, his name does not appear in the *Dictionary of National Biography*. The son of a London physician, Allen was born in Somersetshire, probably in 1663. That he was connected with the old Essex family of Allens or Alleyns seems likely, otherwise his subsequent connexion with Braintree is unexplained. After attending St. Paul's School he proceeded in 1681 to Queens' College, Cambridge, where in due course (1688) he graduated Bachelor of Medicine. There is some doubt as to how the next year or two of his life was passed, but it is clear that he had established himself in practice in Braintree some little time before 1692. It is possible that he may have been apprenticed to Dr. Joshua Draper of that town, whose daughter he married in 1695 (?); by her he had six children, two sons (both of whom died young) and four daughters. Allen died in 1737, and was buried close to his old and intimate friend, John Ray, in the churchyard of Black Notley, Essex. Of his published works the first, entitled *The Chalybeat and Purging Waters of England*, was largely written while an undergraduate. It appeared in 1699, and is possibly the earliest systematic treatise of the kind. It was a "very muddled effort," of which Allen himself seems not to have been proud. A second and much superior edition was published in 1711. Allen's intimacy with Ray arose out of the discovery by the former of some winged glow-worms, and of his prolonged and careful observations on their habits, the results of which were published at the end of the second edition of the volume referred to above. He also made numerous communications to the *Philosophical Transactions* of the Royal Society on natural history subjects. One of these, "On the Manner of Generation of Eels," published in 1698, is of interest, as it is a subject which has been discussed since the days of Aristotle, and has only been elucidated within recent years by the researches of Professor Grassi. Allen's most noteworthy production is a commonplace book of 362 pages. It still remains in manuscript, and Mr. Christy gives two pages of it in facsimile. The title page is inscribed: "Conclusions in several subjects (as Anatomy, Medicine, Nature, Problems of the State, and Accidents of the World) containing the Discoverys in summ upon the Prosecutions and Inquirys made. By Benjamin Allen, Batchellour of Physick or Medicin, formerly of Queens' College, in Cambridge. Anno 1723." In this volume all manner of subjects are dealt with, and it is enriched with many careful and accurate drawings of natural history objects. We learn, too, from it that influenza was "universal in London" in 1712, and that our present much maligned weather appears to have been as much open to execration even in those days. Mr. Christy concludes by stating that Dr. Allen was the original of Ben Allen of *Pickwick*.

Fleet Surgeon William Bett, Surgeon to the Royal Naval College, Dartmouth, has been made a member of the Fourth Class of the Royal Victorian Order.

It seems to be generally understood that the Chancellor of the Exchequer will introduce legislation providing for State sickness and invalidity insurance within the next fortnight, and that provision will be made for medical attendance including the encouragement of sanatoriums. It is also understood that the bill or bills will be referred to a Grand Committee of the House of Commons.

Medical Notes in Parliament.

[FROM OUR LOBBY CORRESPONDENT.]

Debate on Vaccination.

WHEN the motion for adjournment for the Easter holidays was before the House last week, Dr. Hillier raised an interesting discussion on the administration of the Vaccination Acts. He said:

I desire to take this opportunity, more particularly as the President of the Local Government Board is present, to invite the attention of the House to the public health administration of the Board over which the right hon. gentleman so ably presides. I may say at the outset that I have every admiration for the public health administration of that department as a whole, and I know that there is no branch of his work in which the right hon. gentleman takes a keener interest than that of public health. I regret, however, to feel it my duty to call attention to what I venture to regard as the very unfortunate prejudice which appears to influence a certain branch of his public health administration. The subject to which I refer is that of vaccination, and to the fact that exemptions from vaccination are growing at an alarming rate throughout the country. I have during the past few weeks addressed several somewhat searching questions to the right hon. gentleman, and I take this opportunity of thanking him for the courtesy and completeness with which he has replied to these questions on this subject. Among them I received a reply with regard to the present number of exemptions from vaccination in the country. He told us that during the first half of last year there were 456,533 births, and of those 110,851 had received exemption certificates. That amounts to nearly 25 per cent. of the newly born. I am aware that there are still those who believe that the world is flat, and it is possible, such is the variety of views held by members of this House, that there are members who entertain the opinion that vaccination is of no value as a preventive or protection against small pox. Indications have been manifested during the last few weeks which lead me to the conclusion that there are certainly some members who hold that view. I do not propose to take up the time of the House by labouring that point, but I should like to call attention briefly to the small epidemic we have recently had in London. According to a written reply given me on March 14th, published in the Official Report of that date, there had then been 54 cases; 41 were vaccinated, of whom 2 died, and 13 unvaccinated, of whom 6 died. That is, there were nearly 50 per cent. of fatal cases among the unvaccinated. To show that that is not a singular occurrence or a mere accident, I will quote a few lines with regard to the 10,403 cases treated in the Metropolitan Asylums Board Hospital at Homerton from 1873 to 1884. The deaths among the vaccinated were 10·5 per cent., and among the unvaccinated 43·4 per cent. In the epidemics investigated by the Royal Commission on Vaccination in the three towns of Dewsbury, Leicester, and Gloucester, where vaccination had been neglected, we find that, under 10 years of age, among 72 vaccinated children attacked 2 died, or 2.7 per cent., whereas among 961 unvaccinated children attacked, 350 died, or 37.3 per cent. When I remind hon. members that during the eighteenth century it was estimated that in every twenty-five years there were 15,000,000 deaths from small-pox, and when I point out the tremendous difference in the mortality among vaccinated and unvaccinated cases respectively, I think the House will admit that the question is one of profound national importance. It has been my lot to see small-pox come upon an unvaccinated community. I spent many of the earlier years of my life in South Africa, and one of my first experiences was an epidemic of small-pox among the native races, before vaccination had been introduced. I have also seen yearly in that country hundreds of natives come down from the interior pitted with small-pox, disfigured until there was scarcely a spot the size of a thumb-nail on their face which was not marked by the ravages of this disease. I cannot help recalling what occurred with this epidemic of which I was a witness. We had every facility for isolation, and we adopted methods of isolation. No doubt that was instrumental to a very large extent in checking the course of this disease. But the disease was never stopped or stamped out in any quarter until we had got the whole of the native population of that particular locality vaccinated. There was one particularly interesting case, and that was the case of the Mohammedan races dwelling on the Cape Peninsula. The small-pox epidemic spread amongst them, and they died in great numbers. On religious grounds—they were conscientious objectors—they were not vaccinated. They believed it was an insult to the Deity to resort to such very human and artificial a device as vaccination. On this ground they refused to be vaccinated. But before that epidemic had run its course, when they saw the protective value of vaccination amongst the natives who were vaccinated, and among the few Mohammedans who were gradually persuaded into being vaccinated, Mohammedans came to the public vaccinators and prayed that they also might be afforded this protection, and so were vaccinated. I will give now one more experience later when I was on a scientific errand to Berlin. I had one or two interviews with Count von Posadowski, who was then Minister in the German Empire, holding a position corresponding to the office of our Home Secretary. He was very interested in the public health legislation and practice of this country. He remarked to me: "You have very weak laws with regard to vaccination in your country." I replied: "Yes, I fear we have." He responded: "To us Germans it is a matter of great surprise that you gave the world vaccination and yet you keep small-pox." (An Hon Member: How much?) How much? 2,500 deaths in 1902. But I will come to that presently. What are the German statutes and what has been the German practice in the matter of this disease? Germany has a law which enjoins vaccination and revaccination, and they have practically stamped out small-pox in their country. I should like, however, briefly to refer to figures taken over a period of ten years—and I might quite well extend the comparison further—as to the deaths from small-pox in the German Empire and in the United Kingdom. I have here the total deaths from small-pox in the German Empire for the years 1898–1908 inclusive; that is a period of ten years. The population of the German Empire in 1908 was over 62,000,000. During the whole of those ten years—and I might go back another five or ten years—deaths from small pox out of that enormous population never in any one of those years reached the number of 100. Actually the highest number was 65 in the year 1908. What was our experience during the same decade? We had during the same decade, in different years, 600, 700, and 800 deaths out of a population of 44,000,000. In 1902 there were 2,545 deaths from small-pox in this country. I confess that until I came to study the figures I was not aware of our national disgrace in this matter. (An Hon. Member: That was before the exemptions took place.) I am dealing with the broader question first of all, although, as a matter of fact, the hon. member is not quite accurate; the exemptions began in 1898, under the Conscientious Objectors Act, so he is not quite accurate. I will give one more final piece of evidence with regard to the position of affairs in Germany, because it was obtained by the Local Government Board for their own information and by one of their own officials, Dr. Bruce Low. In his report he says in Germany practically no steps are taken for providing hospitals such as we have here for the accommodation of small pox patients. In London there are hospitals with sufficient bed accommodation for 2,000 or 3,000 patients. In the whole of Berlin they rely upon a dozen beds in a pavilion off one of the general hospitals, because they rely with absolute confidence

upon their measures of vaccination and revaccination. I do not think I need labour this point any further—the effect of vaccination and revaccination as a prevention of small-pox is that it reduces small-pox almost to a negligible quantity. I think that is sufficiently demonstrated by what I have adduced to the satisfaction of any ordinary rational being. Why is it, then, that such a prejudice has arisen, as I admit has risen in this country against it? There was a period when arm-to-arm vaccination was in vogue, a certain number of cases of septic arms arose, which did cause disease and even a few deaths, and which in certain quarters gave rise to a certain amount of prejudice against the whole practice; but that period has gone by. We have learnt our lesson in these things, and to day the application of calf lymph supplied by the Local Government Board is accompanied with a minimum of risk, which is infinitesimal when compared with the risk of small-pox which an unvaccinated person runs in this country, and still more if he goes abroad, along the Mediterranean or to any places on the African coast. This is a national question in which we are all deeply interested, and I am not endeavouring to make any party capital out of it. It is a national question in which we are all interested, and I cannot help looking forward to the national welfare in this country with some anxiety. It may be argued that, with all our modern appliances for the isolation of infectious diseases, and all our public health and sanitary developments, we can afford to run the risk of allowing the population to go unvaccinated. I have thought about this question a great deal, and I have had much experience in vaccinated and unvaccinated communities, and I recognize that this is a risk which we cannot afford to run. Even supposing we succeed for a time in practically having no small-pox at all, it is always liable to be imported Cases may arise among adolescents or adults, and if you could ensure the cases being taken forthwith to some place and isolated, then there would be a strong prima facie case for the other view which is held upon this question. But you cannot rely upon your present system. Mistakes in diagnosis have arisen, and they always will arise. I can assure hon. members that it is not such a simple thing at the first blush to determine whether a case is small-pox or chicken-pox. Many of our doctors have had very few opportunities of ever seeing small-pox, and, therefore, they are not too familiar with it. You cannot rely upon the fact that no mistakes will be made, and you cannot rely upon this disease being brought to the notice of the health authorities the moment it arises. The danger is very much increased in this way, because you now have 25 per cent. of your children unvaccinated, and that is an under-estimate rather than an over-estimate. You have an increasing number of unvaccinated children in this country. The time will come when these infants will become adolescents and adults, and the danger of an epidemic amongst the community will be greater in that case than when it occurs in the case of children taken ill at home. When an adolescent or an adult going to his daily work contracts this disease there is a good chance of his continuing at his work and infecting, perhaps, another twelve or twenty people before the disease is noticed. What is the remedy which we can, as reasonable and moderate politicians and members of this House, with some sense of public responsibility, urge upon the Local Government Board? I am not going to propose the re-enactment of compulsory vaccination. That may or may not be expedient, and the time may come when, through a national disaster, we may be compelled to resort to it again. I sincerely hope that time will not come. As a matter of practical politics I do not suggest the re-enactment of compulsory vaccination. What I ask is, Are we, under the existing conditions and under the existing law, doing our best in the matter? Compulsory vaccination is practically gone, but it should be borne in mind that the State still interferes in this matter, and still keeps up a staff of vaccination officers and public vaccinators, supplies lymph, and sends certain forms notifying parents that their children, if not vaccinated, may be vaccinated. It amounts to little more than that, and that is the point on which I desire to criticize this portion of our public health administration at the present time. After the registration of a child, the parent is furnished with what is known as Certificate A, calling his attention to the fact that the child must either be vaccinated and a certificate furnished to that effect, or a certificate of conscientious objection furnished. It is with regard to these forms I desire to enter a respectful protest. Take the last form which is sent to the child's parent. It is not long, and I will read it:

> I hereby give you notice that on a certain day your child will be 4 months old, and that, unless within seven days from that date I shall have received from you or from the public vaccinator a certificate of the successful vaccination of the said child, or a statutory declaration made under Section 1 of the Vaccination Act, 1907, within four months of the birth of the said child or some other legal excuse for the non-vaccination of the child, it will be my duty to notify the case to the public vaccinator, who will then in due course visit the child's home and offer to vaccinate the child.

And so on. This is going too far. We have had the conscientious objector going before a magistrate and explaining he has a conscientious objection to vaccination, and with some difficulty obtaining a certificate of exemption; now exemption is made not only extremely simple, but is so brought before the notice of the average working-class householder as to lead him to suppose vaccination is really a perfectly superfluous operation, and that it is merely a choice between one bit of paper and another. What happens? The mother of the child turns to her neighbour and says, "What did you do?" She says, "Oh, I got the other certificate, the certificate of exemption." "How is the baby?" "He is going strong; he has not had small-pox." "Then I shall follow the same plan." I can quite understand that appealing to the lady householder with several children, but it does not meet the case. There is a danger which is concealed from these people. Hon. members who are candid cannot deny that this danger still lurks and exists, and will become an increasing danger as you get an increasingly unvaccinated community, because it is the vaccinated community which confers a certain degree of protection on the unvaccinated community by making the spread of small-pox less liable to occur than it otherwise would be. It is the policy of the State to interfere in this matter. Let our interference be a rational and intelligent one, and to make it that I venture to think—and the opinion is held by a large number of medical officers of health—we should, with the first certificate sent to the parents, also send a circular pointing out in moderate terms the value of vaccination as a means of protection against small-pox, and the fact that, after many years of apparent quiescence, small-pox has once more appeared in this country, and already cost several lives, advising parents to take advantage of the facilities afforded them, and reassuring them further about the dangers with regard to lymph in so far as it is most carefully obtained and provided by the Local Government Board. Some circular in these terms would be converting an irrational into a rational procedure.

Mr. Guinness supported the contentions of Dr. Hillier, and urged that more should be done by the Local Government Board to incline people to have their children vaccinated. He referred to the experience of Prussia, and when interrupted by Mr. Chancellor as to the good results being due to sanitation, pointed out that other infectious diseases, such as measles and chicken-pox, chiefly found in children, ought to have decreased in the same degree as small-pox if the improvement in the case of that disease was due to improved sanitation.

Mr. Burns followed, and said: The hon. member (Dr. Hillier) paid the Local Government Board a well-deserved compliment for the administration of several branches of public health. I think he might have gone further, and said that in no country in the world had there been such a reduction in the general death rate, in the diminution of infant mortality, and in the abatement of the scourge of tuberculosis,

typhus, typhoid, and many other diseases. I am very much obliged to a medical man paying a compliment to our department which could be confirmed by facts and figures. But he descended from the general, which was complimentary, to the invidious and particular, which was not quite so complimentary, and he tried to prove that the eulogy which was due to the Local Government Board in the combating of other diseases was not equally due in the combating of small-pox, and I failed to catch any statistical justification for that difference in the treatment of small-pox and the other diseases to which he might properly have referred in his previous remarks. My hon. friend, with the ingenuity of his distinguished profession, took us to India, South Africa, and the Malay Peninsula.

Dr. Hillier: I am sorry if I did not make myself clear. I was referring to Indian subjects in South Africa and not in India, and to the Hindu population of the Malay Peninsula, who are Mohammedans.

Mr. Burns: The hon. gentleman was giving English application to his observations. He was trying to make our flesh creep by illustrations and by facts and figures which did not and could not apply to sanitary conditions and the social circumstances that prevail in this country at present. I propose very briefly to inform the hon. member and the House that I decline to allow my flesh to creep in presence of the statement made by the hon. member. The epidemic which the hon. gentleman referred to as justifying his criticism of the administration of the Vaccination Acts in this country is after all not the serious thing which one would judge from the general tone of his speech. The facts are these: We have had in the East End of London 58 cases of small-pox; of these, 42 were vaccinated and 2 died; there were 16 unvaccinated and 7 died. I decline to deduce anything from these figures either for or against vaccination from a small epidemic of this kind. I decline to deduce anything like the panic suggestion underlying but not brought to the surface of the hon. member's speech to the extent which I would have expected. I am going to leave the facts in simple proportion as I have stated them. Until we get complete and final figures in regard to ages, the incidence of the disease, re-vaccinations, and so forth, I think it would be premature and unfair to either side in this controversy to do other than state the simple facts. But if I were not a Minister I would retort on these simple facts that I doubt if we would have had a single death, vaccinated or unvaccinated, had it not been that there was a misdiagnosis of a case of small-pox as chicken-pox. Those who run may read, and they may deduce from that whatever they like. I am not at all alarmed by the comparison made with Germany. My hon. friend made a very fair point, if he will allow me to say so, when he referred to the statement of the German who said to him: "Britain has given the world vaccination and kept small-pox." That is a statement of a broad and sweeping kind that has got to be qualified by existing facts. What are the facts? The hon. member must not go back into history and select the purple patches to support his line of argument. I entertain the respect for figures tempered by fact which every responsible man ought to have. Just in proportion as in recent years exemptions have gone up from 4 per cent. to 30 per cent. so deaths from small-pox have declined. I am not going to make the mistake which was made twenty years ago. Twenty years ago a gentleman in a public place pointed grandiloquently to a series of diagrams, which were all wrong, and said to me: "I ask the hon. member to remember that figures never lie." My retort, and it was effective for the moment, was, "No, but liars sometimes figure."

Dr. Hillier: I do not know whether the right hon. gentleman means that reply for me.

Mr. Burns: No. The occasion referred to was at a meeting of the Statistical Society, and the person in question was a member of the other House, and my view of his remarks on that particular occasion would be shared by the hon. member had he been there. There is no member in this House to whom I would be less willing to apply such a remark than to the hon. member who has spoken this afternoon. The facts are these—I am right in giving these figures with regard to London: During the time that I have had the honour of being at the Local Government Board the following have been the deaths from small-pox in a city of 4,500,000 inhabitants: 1906 no death; 1907 no death; 1908 no death; 1909 two deaths; 1910 no death; so that in five years there have only been two deaths from small-pox in a city of 4,500,000 of people. Not even Germany or Berlin can transcend those figures by the increasing cleanliness, increasing sobriety, and greater attention paid both by the community and individuals to removing all causes of small-pox, and nearly every other disease.

Dr. Hillier: Measles?

Mr. Burns: The hon. member is trying to get me off the rails of small-pox by talking about measles. Even there I decline to be moved, because in the last six months, when lots of people have been panic-stricken about rat plague, Asiatic plague, small-pox, and measles in London, the Local Government Board stuck to its job. We have hunted measles like sleuth-hounds. The result is a general decrease. My hon. friend suggests that we should in some respects alter Form Q.

Dr. Hillier: Certificate A.

Mr. Burns: But my hon. friend said he would not propose any re-enactment of compulsory vaccination. If he is consistent and logical he ought to do so. He said it would not be practical politics. Then he asked under the existing law were we doing our best to combat small-pox? The figures I have adduced with regard to London—and similar figures can be adduced with regard to England and Wales—have proved that we are. The other suggestion is that we have given a definite indication to parents to exempt themselves by our circular of January 28th, 1910. I would like to meet my hon. friend the member from one of the Suffolk divisions (Mr. Walter Guinness) during the Easter holidays, and we would not want a very large microscope to see how far we have altered the form.

Mr. Guinness: I meant to make it clear that you have altered the form that was covered by the circular.

Mr. Burns: These things are never made clear when a Government Department is being attacked. The clearness comes from interpolation, but it does not improve matters so far as the actual facts are concerned. The only thing we have done is this: The law was altered because a certain misapprehension had to be removed, and the circular of January 28th, 1910, was simply to point out that the exemption declaration must be made within four months of the birth of the child under the law as it now is, as against the old instruction and old form that it was to be made within four months and seven days, to obtain the certificate of exemption. That is the only thing the Government has done, and it is the only justification for the criticism to which we have been subjected. We have practically adhered, with the exception of providing for four months as against four months and seven days, to the prescribed forms that were left to us as a heritage of vaccination legislation by the protagonist of prophylactics, the right hon. member for Wimbledon (Mr. Henry Chaplin), who was my predecessor some years ago in this office. Beyond adopting the circular and form—a simple change under the law—nothing has been done, and it is a fact that exemptions have not increased through an alteration of the law or through exemptions. Mortality has diminished. I draw no inference from that fact, but for the first time in the four years since the Act was altered, and not until now, have we heard the policy of the Local Government Board adversely criticized in regard to the administration of this particular code of sanitary laws. After the simple explanation I have given as to the reason why the instruction was altered in January, 1910, and the new Form Q was adapted to the change of the law in 1907, it seems to me that I have nothing further to add except that I cannot accept the hon. member's suggestion that we should supply on Form Q or any other form a few

simple and elementary statistics on the subject of vaccination. I have been twenty years a member of this House, and if there is one subject on which I shall be disinclined to quote statistics from any source or any section, it is on the thorny subject of vaccination. Instead of listening to the suggestion of the hon. gentleman, with all respect, it seems to me that what we have to do, as the Public Health Department, is to hunt disease of all kinds and descriptions, in every shape and form, and with all the means at our disposal. We have achieved such success as to warrant the compliment, generous and full, which my hon. friend paid to me and my department. Instead of directing my energies in the direction suggested, I may perhaps be allowed to go on with the work, devoting to it my brains; and if it be continued, I believe that it will well deserve at the end of two or three years hence even greater credit than has been given this afternoon. I believe that all this fear and panic, all this talk about plague and small-pox, is due to misconception and misapprehension of social facts. These diseases are in a very different position from what they were in ten, twenty, thirty, or forty years ago, and it is a creditable and happy circumstance that I, as Minister of Health for England and Wales, am enabled to state that in regard to the administration of public health, no other country is comparable to ours, and I am pleased to have heard such hearty recognition of our efforts from the different speakers this afternoon.

Mr. H. W. Forster supported the position taken up by Dr. Hillier, and said that the steps about exemption orders had been taken so recently by the Local Government Board that there had been no time to procure statistical evidence as to their effect. It was the growth of the exemptions that was alarming. As to the Prussian case he was able to quote figures. The year before 1874 there were 95 deaths per million, the year before that 357, the year before that 2,624, the year before that 2,432, and so on. After 1874 there were 36 deaths per million, then year by year 31, 3, 7, 13, 26, 36, 20, 14, 14, 5, 5, 3, 5, 1, 1, 3, 4, 3, 8. He thought those figures were not unfavourable for comparison with the figures quoted as regards London. They bore out the contention that a vast improvement occurred after the passage of the Prussian law. He would also quote the report of the Metropolitan Asylums Board on the epidemic of 1870–72, which showed that out of nearly 15,000 cases there were only 4 cases of small-pox among the revaccinated. He thought it was idle to deny the value of vaccination, and he strongly urged the value of issuing with Certificate A some notice directing the attention of parents to the true value of vaccination.

Dr. Chapple, who spoke next, said: I should like to congratulate the hon. gentleman who introduced this question upon the wisdom, moderation, and scientific precision with which he analysed the facts. Small-pox is bound to die out, and it may die earlier by improved sanitation, which sweeps away germs on the one hand and protects the individual on the other, or it may die out by acquired immunity in the individual or by acquired immunity in the race. But there can be no doubt whatever of the efficacy of vaccination as a preventive. The facts are proved up to the hilt that if there was a distribution of germs in this Chamber, or a prospect of such, there is not a member who examined the facts but would hurry off to be vaccinated. There are some people who are foolhardy enough to run that risk, but it is impossible to go into the facts, which have been accumulated for generations, and to deny the efficiency of vaccination as a preventive against small-pox. The only question is: Have we arrived at such a degree of sanitation that we can afford to dispense with that preventive? If it is possible to have your slums so clarified, and your drainage so well done, and the general well-being of your community so efficient as to provide a fighting force sufficient to enable you to run the risk of dispensing with an effective remedy such as vaccination, well and good. The problem to-day is not whether vaccination is effective. That matter is removed beyond the region of disputation, and those who examine the facts cannot possibly come to any other conclusion than that vaccination is so effective that it would be the moral duty of every father of a child to see it protected from the danger of small-pox, if that danger was in its vicinity, and that it would be the duty of the State to ignore the claim of the conscientious objector and to say it could not allow an individual to be a centre of infection and of danger and of epidemic to the whole community. The facts are so clear that the only conclusion we can come to is that if the sanitary conditions are such as to reduce the danger and to ensure the absence of germs, the time will come when we can dispense with vaccination altogether. The question is, has that time arrived? No one can go through the slums of this great city and conclude that that time has arrived. The danger exists to-day in great centres like London and Glasgow, and conditions prevail which would make an epidemic of small-pox an alarming affair. The right hon. gentleman trusts to sanitary provisions to keep the germs of small-pox out. This is a very difficult task when we have such an enormous congestion of population in our slums, which must become infected centres if the germs of small-pox gain access. We are resting in a fool's paradise in this matter, because by isolation and other favourable conditions there has been no introduction of the germs. If infection started in London it would be the duty of the Local Government Board to insist upon vaccination as a preventive to small-pox. I am prepared for the time to arrive when vaccination can be dispensed with, but the time has not yet arrived when we can allow this important weapon in our attack upon zymotic diseases to be laid aside. The subject then dropped.

The Teaching of Hygiene in Elementary Schools.

Dr. Addison introduced under the ten minutes rule his bill "to require that in public elementary schools instruction shall be given in hygiene, and to girls in the care and feeding of infants." He said that it was in no sense a party measure. More than 200 members of the House on all sides had signified their approval of it. The bill provided that simple instruction should be given in all public elementary schools in hygiene, and to girls as to the feeding of infants. Since the introduction of this bill last year two very important official publications had appeared upon this subject. One was from the principal medical officer of the Local Government Board on child mortality, and showed that the provision of this instruction in a proper manner would greatly prevent the waste which provides so much material for the Poor Law in this country, and the result of which they were endeavouring vainly to mitigate by various schemes brought before the House. The report of the chief medical officer of the Board of Education showed, he thought, some glimpses of the first fruits of this natural tragedy. Of late years there had been a very considerable quickening of the public conscience in this matter, and, owing to the efforts of various associations and the voluntary work of school teachers and public authorities, there had been a remarkable diminution in infant mortality in this country. Nevertheless two years ago we found one child in every three in this country died under the age of 5 years, and one died out of every five of children less than twelve months. In this country 150,000 children under the age of 5 died every year. There were many causes which were closely interwoven. There was overcrowded rooms, bad sanitation, mercantile employment, and many others, but he did not hesitate to say at least 50,000 children died in this country yearly as a direct or indirect consequence of parental ignorance. He would give the House one illustration. In the fifteen large Lancashire towns, with a population of 3,000,000, he found in the record of the Registrar-General that for the summer quarter of last year the death-rate was 30 per cent. higher than in London, mainly due to infant mortality. Infant death-rate was three times higher than in London, particularly owing to infantile diarrhœa, presumably due to

causes attributable to parental ignorance. In Burnley, which had an unenviable reputation, 201 deaths per thousand, according to the medical officer's report, were attributable to the fact that the mothers working in factories left their children in charge of ignorant persons. There were numerous quotations which he could make from the report presented by the Local Government Board, which stated in explicit terms that we should make no real progress in this matter until we began our education at an early period of life. It was not the fault of the persons and young people in whose charge children and infants were left that they knew no better than to give them improper food as a substitute for milk; they inherited the ignorance and prejudice of those older than themselves, and until we made an organized endeavour to remove this ignorance at that period of life when it could be removed this state of affairs would continue. It was not simply a question of the elimination of the unfit. Increased mortality prevailed at the age of about 20 in the same districts that presented a high infant death-rate. In the report of the Board of Education, it was recorded that in this country among 6 million school children, nearly 3 millions were at present suffering from bad teeth. There were 2 millions with unclean heads, and there were half a million suffering from disease of the throat, mainly preventable, which could be done away with if their parents had been instructed in early life. It was proved that hygienic instruction could be given with success, and if it could be incorporated in the code there would be no need for this bill. He urged the value of the instruction as a means of improving the health of the children and giving a better start in life to the next generation, and so lessening the suffering and misery which caused so heavy a burden on the Poor Law.

The bill is backed by Mr. Arthur Allen, Mr. Charles Bathurst, Mr. Butcher, Mr. Fenwick, Mr. Munro Ferguson, Mr. James Hope, Mr. Arthur Henderson, Sir Joseph Larmor, Mr. Chiozza Money, Mr. F. E. Smith, and Mr. Eugene Wason. The second reading was put down for April 20th.

Trachoma.—On the motion for the Easter adjournment, Mr. Rowland Hunt called attention to the prevalence of trachoma, which he said was due to the alien immigrants who came to this country affected with the disease. He urged a more strict administration of the Aliens Act, with a special view to prevent the admission of persons suffering with trachoma.

Plague in India.—Mr. Keir Hardie asked the Under Secretary last week to state the sum budgeted for by the Government of India for dealing with the plague. Mr. Montagu replied that provision for plague expenditure and for other sanitary and medical charges was made in the Indian Estimates under the head "Medical," for which a sum of £1,301,600 had been allotted. He was unable to give the estimate for plague expenditure separately. In addition to the provision made in the public accounts, considerable sums were expended on account of plague by district boards and municipalities. In 1908–9 recurring grants aggregating £200,000 a year were made to the provincial Governments by the Government of India for expenditure on sanitary improvements, with special reference to the prevention of plague. And in 1910–11 non-recurring grants aggregating £380,000 were made for the same purpose. Asked further whether sanitary houses could not be erected to replace plague-infected huts, Mr. Montagu said that the increased prevalence of plague in certain parts of India at the present time of the year was believed to be due to the fact that this was the season of greatest prevalence of rats and rat fleas. It was a well-recognized measure of precaution that on the first sign of the presence of plague the residents should evacuate their dwellings. The Government and the local authorities encouraged and assisted them to do this by the supply of tents and hutting materials, by erecting temporary dwellings, by providing guards for the vacated houses, and by money rewards. Expenditure on this account was included in the grants mentioned in the answer to the previous question. Special grants had also been made to local Governments by the Government of India for the purpose of improving general sanitary conditions, including the housing accommodation of the population.

Plague Infection (India).—Mr. Keir Hardie last week asked a question as to the spread of plague from infected soil, and what steps were being taken to remove people from infected spots. Mr. Montagu replied that exhaustive inquiry had shown that the plague bacillus did not live in the soil. It speedily died outside the bodies of men or other animals. It was not, therefore, thought necessary to invite the people to submit themselves to the inconvenience of evacuating their houses unless the disease was present or was imminent in a locality. Asked whether it was not a fact that the authorities did remove people on account of infected soil, he replied, No. As he understood—it was a very difficult and complicated matter—the theory of soil infection had been abandoned as a result of scientific investigation. People were removed from infected localities when rats which were likely to carry infection were present in the localities.

Bleaching Flour and Local Government Board Reports.—In answer to several questions, Mr. Burns has stated that the subject of flour adulteration was receiving his attention, but as the inspectors' reports had only just been issued some time must be allowed for their consideration. He thought the alarm created by the reports had been exaggerated; the Board had in preparation a third report on the nutritive value of various kinds of flour.

Appendicitis and Impure Bread.—In reply to Mr. Charles Bathurst, who asked a question referring to Dr. Hamill's report on the constitution of baking powders and self-raising flour, Mr. Burns replied that present knowledge did not, as he was advised, enable a statement to be made as to whether food containing insoluble mineral matters, such as calcium sulphate, might be responsible for the production of appendicitis or of other intestinal disorders.

Royal Naval Colleges and Infectious Disease.—Mr. Arnold Ward asked the First Lord of the Admiralty how many cadets at Dartmouth had suffered from infectious illnesses during the past term; how many cadets had suffered from more than one illness; and how many cadets had contracted a second illness in the sick quarters. Dr. Macnamara: The reply to the first part of the question is 242; to the second part, 30; and to the third part, 6. In answer to a further question as to the provision made for isolating cases of infectious illness, Dr. Macnamara said that at Dartmouth there were two separate blocks in the hospital containing four entirely isolated floors, each floor capable of accommodating 16 to 20 cases. Suspected cases and cases awaiting diagnosis were isolated in small, separate rooms. At Osborne, as soon as any possibility of an infectious case came under observation it was at once placed in one of the isolation rooms attached to the college sick quarters. If the case proved to be infectious, it was transferred by ambulance at once to the infectious hospital. The isolation room was at once disinfected. At the infectious hospital there were four separate ward blocks, each taking about 20 patients, in which different infectious diseases could be separated. Attached to each block there was also a single isolation room which was used for observation of separate cases. He understood that these precautions were in excess of the practice which obtained in the public schools of this country.

Tuberculosis Commission Report.—In reply to Mr. Charles Bathurst, Mr. Burns said that he understood that the final report of this Commission would be issued early in May, and that the appendices would follow soon afterwards. All experimental work finished over six months ago, and the Commission had been occupied since in drafting the report.

Withington Workhouse Infirmary.—In reply to Dr. Addison, the President of the Local Government Board said that he was aware of the conditions existing at the Withington Workhouse Infirmary, and he had seen a newspaper report giving particulars respecting overcrowding, and a high rate of mortality among the children. The statements contained in this report were, he was informed by the inspector, in several respects not quite accurate. The number of children in the infirmary had increased more rapidly than could have been anticipated, but he understood that efforts were being made by the guardians to cope with the difficulty. Two new blocks for the infirm were almost ready to be opened, and an arrangement had been made with the Prestwich guardians to utilize some of the accommodation which that body could spare in their new infirmary. It was anticipated that these arrangements would provide a small margin, but the matter would continue to have his attention.

Vaccination of an Exempted Child.—Mr. Lansbury questioned Mr. Burns last week as to the vaccination of the child of a conscientious objector who had obtained a certificate of exemption. Mr. Burns stated that the child was supposed to be suffering from small-pox, and was sent to South Wharf on March 9th. The medical officer there, having some doubt whether the diagnosis was correct, but realizing that the boy had been exposed to the infection of small-pox, took the responsibility of vaccinating him. The nurse who removed the case to the South Wharf informed the doctor that the father did not want the boy to be vaccinated, bnt no other protest was, as he understood, made. While there was a doubt as to the diagnosis the patient could not be safely returned home, and he was, therefore, sent to Joyce Green, where he remained till March 25th, when he was discharged.

Conscientious Objectors in Sheffield.—Mr. J. H. Lewis has stated, in answer to Mr. Samuel Roberts, that he was unable to give the numbers of statutory declarations of conscientious objection to vaccination made in the city of Sheffield, but the figures for the two Poor Law unions of Ecclesall Bierlow and Sheffield, which included the city, and to which the city contributed about 96 per cent. of the population, were as follows:

	Declarations.	Percentage of Declarations to Births.
1908	1,047	7.1
1909	1,537	11.1
1910	2,026	15.3

Vaccination.—In reply to Mr. Ramsay Macdonald Mr. Burns said that he found that the vaccination officer for the Croydon Union had stamped some forms with the words, "Small-pox in London: many deaths." This was not done with the cognizance or approval of the Local Government Board. He was informing the officer that his procedure was improper, and that the prescribed forms must not be tampered with in future.

Lead Poisoning.—Mr. Hills asked the Home Secretary whether he was aware that 15 cases of lead poisoning occurred in the china and earthenware trade in the first two months of 1911, against 8 in the same period of 1910; whether the report of the principal chemist of the Government Laboratory for 1910 called attention to the fact that samples of glaze taken from works where lead poisoning occurred contained lead oxide in proportions varying from 12.6 to 47.5 per cent.; and what action he intended to take. Mr. Churchill said that the increase in the number of reported cases coincided with increased activity in the trade; the results of the analyses referred to (which were undertaken by the Government Laboratory for the Home Office), and the whole question had been the subject of an exhaustive inquiry by a representative committee, and he was proposing to take steps to give effect to their recommendations.

The Port Sanitary Authorities Expenses Bill, presented by Mr. Ferens, proposes "to legalize the payment of a subscription to the funds of the Association of Port Sanitary Authorities or the Council thereof." The Bill is supported by Mr. Byles, Sir William Howell Davies, Sir George Doughty, Mr. Fell, Mr. Fenwick, Mr. Hudson, Mr. Shortt, Sir Luke White, Mr. Guy Wilson, Mr. John Wilson, and Mr. Stanley Wilson. It was put down to be read a second time upon Wednesday, April 19th.

Shuttle-Kissing in Cotton Mills.—In answer to Major Stanley, Mr. Churchill stated that inquiry was now being made by the Factory Department, in conjunction with a medical officer of the Local Government Board, into the practice of shuttle-kissing, its effects on the health of the workers, and the possibility of adopting some arrangement which would render the practice unnecessary. He could not say at present when the inquiry, which had only just commenced, would be concluded.

Tinned Meats.—Mr. Crumley asked whether tinned or preserved meats coming from foreign countries for the supply of the British army, navy, and the general public were subject to inspection to test their qualities as human food; and whether there was any guarantee given by the contractors that horseflesh was not used in the production of such meats coming from abroad. Mr. Burns replied that full power to inspect meat coming from abroad was contained in the regulations which had been made under the Public Health (Regulations as to Food) Act, 1907. He had no information as to the terms of contracts made by importers, and contracts for the supply of provisions to the army and navy were not dealt with by the Local Government Board.

Meat Extracts.—In reply to a question by Mr. Crumley, Mr. Burns said that he was unable to give the names of the firms in Great Britain engaged in making meat extracts. So far as he was aware, these meat extracts were not prepared from meat in this country. Inspectors from his department did not inspect the factories. Under the Public Health Acts, the duty of inspecting articles of food intended for sale for human consumption rested on the local authority. He was not aware whether any register was kept of the number of animals slaughtered for the production of meat extracts and of the number of carcases used in their manufacture.

Chinese Pork.—On Monday Mr. Fell made inquiries as to the districts from which Chinese pork came with reference to the existence of plague in those districts. Mr. Burns said, according to the information which he had received, the pigs were obtained from that part of the Yangtse Valley from which most of the pigs had hitherto been derived. No plague had been reported from this part of China during the present epidemic. The most recent Consular report was that which was presented in August last. He added that he was hopeful of being able to send one of the Local Government Board doctors, who is at present in China, to the place where the pigs were bred, and where this pork was prepared. To his knowledge there was no foot and mouth disease in the district of origin of the pork, and it was only fair to state that there was no plague nearer than 800 to 1,200 miles.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

APPOINTMENT OF INSPECTOR OF LUNATICS.

THE Lord Lieutenant has appointed Dr. W. R. Dawson, M.D.Dubl., F.R.C.P.Irel., to be an inspector of lunatics in Ireland "to fill an impending vacancy." Dr. Dawson, who received his M.D. degree in 1891 and has served a term of office as Censor of the College of Physicians, was awarded the Stewart Scholarship in Mental Diseases in 1895 and also the Medical Travelling Prize. He is at present medical superintendent of the Farnham House and Maryville Private Hospital for Mental Diseases and an Examiner in Mental Diseases in the University of Dublin. Under the Royal Commission on the Feeble-minded he held the position of medical investigator, and he was at one time assistant physician of the Royal Edinburgh Asylum. He has also contributed extensively, mostly on the subject of mental diseases, to the medical journals. As there are only two inspectors of lunatics for the whole of Ireland, the Government has shown wisdom in continuing the custom of appointing a medical man, in spite of the agitation started in Cork and Blackrock with a view to securing that in the one case the inspector should be a layman and in the other a woman. If there were a board of half a dozen or more there would be good reason for having one or two lay members, and also perhaps a woman among the number, as inspectors of lunatics, like superintendents of asylums, have many other than purely medical functions to perform; still, these are all subordinate and auxiliary to the personal care of the insane, and it cannot be said that two medical men are too many to inspect all the lunatics in Ireland. In certain quarters, however, the selection made is resented, as is evidenced by a letter from the secretary of the Poor Law Association of Ireland to the *Irish Times*, which runs as follows:

> It strikes me as significant that two recent appointments made by the Lord Lieutenant—this one now chronicled and that of the present Registrar-General (Sir William Thompson)—are appointments which flavour of a prominent connexion with promotion of the Women's National Health Association crusade. The significance is more striking when we know how much the success of the efforts of the same association are dependent on the help and co-operation of the Poor Law medical gentlemen throughout the dispensary districts of Ireland. Apart altogether from the official injustice to the Poor Law service of which I have written, there are larger interests at stake, when one considers what a knowledge of practical administration means in a gentleman promoted to such a position as Inspector of Lunatics as compared with a gentleman who has had no such training. The former brings experience to bear in his inspectorial capacity; the latter must only experiment in order to become efficient, and experiments are oftentimes the opposite of pleasant to those who have to feel them or their cost. The gentleman who has been appointed may have a practical knowledge of local administration, etc.; but so far as I have followed up the working of the various Acts, I have never before heard of his name in connexion with either the Poor Law or the asylum boards, and I contend it is a practical knowledge of the working of these Acts, and proved efficiency, which should have been the recommendations to such an appointment.

DUBLIN HOSPITALS TUBERCULOSIS COMMITTEE.

The reports submitted at the third annual meeting of the above committee on April 12th, Sir John Moore in the chair, showed that the Samaritan Committee had spent during the year £93 15s. as follows: 186 families received nourishment (eggs, milk, meat, meal, etc); 176 patients received shoes, clothes, bedding, etc.; 14 families had rent paid for them while the bread-winner was at Newcastle or in one of the Dublin Union hospitals; 91 children of parents suffering from tuberculosis were sent to the country through the Fresh Air Fund; 1 child was boarded out while the mother was in hospital; 6 children were sent to schools or institutions after parents' death; 1 patient was sent to Newcastle, and the sum of £3 17s. paid in advance for ten weeks. The reports of the work done by the three tuberculosis nurses in Dublin showed that 394 patients were attended by them during the year (as contrasted with 362 during the previous year) and a total of 6,845 visits paid. The report on the inspection of their work by the Queen Victoria's Jubilee Institute for Nurses reads as follows:

> The preventive and humane work of the tuberculosis nurses working under the Women's National Health Association in Dublin is being successfully carried on. It is quiet and far-reaching, and the new development of the tuberculosis classes, which were started in December of last year, will be a decided factor in helping to reduce the death-rate from this disease in the future.

IRISH FREEMASONS.

The Duke of Abercorn, K.G., Grand Master of the Ancient Order of Free and Accepted Masons of Ireland, has appointed Sir Charles A. Cameron, C.B., M.D., as his Deputy in the place of Sir James Creed Meredith, who has resigned owing to ill-health. Sir Charles is a Past Grand Senior Deacon of the Grand Lodge of Ireland, a Past High Priest of the Grand Chapter of Ireland, and for some years past has held office of Deputy to the Duke of Connaught, Grand Master of the Order of the Temple, Ireland. He is also Grand Chancellor of the Supreme Council, 33rd Degree for Ireland, and a Representative of a Foreign Grand Lodge.

ANTIVACCINATION TROUBLES.

For the past two years the Enniscorthy Board of Guardians has persistently declined to issue notices or institute any proceedings under the Vaccination Acts, with the result that there are now 1,400 defaulters in the union, of whom almost 600 are in the town of Enniscorthy. Dr. McCormack, the newly-appointed medical inspector of the Local Government Board, recently visited the district in connexion with the matter, and informed the clerk of the union that unless the guardians enforced the law the Local Government Board would either dissolve the board or apply for a *mandamus*, the cost of which would be borne by the guardians individually, as it could not be defrayed out of the rates. It was further pointed out that this would be the last chance that the guardians would be given to enforce the law. Notwithstanding these threats the guardians, by 27 votes to 6, have again declined to enforce vaccination. The next move of the Local Government Board is awaited with interest. The action of the guardians seems to be popular.

At the Carrickmacross Board of Guardians meeting last week over seventy vaccination defaulters were reported by the three medical officers in their respective districts, but the case on which most interest hinged was that of Mr. J. Burke, Excise officer, Carrickmacross, who had previously been excused by the guardians on the grounds of conscientious objection to vaccination; this decision was subsequently nullified by the Local Government Board, which expressed the opinion that the guardians had no option in the matter but to prosecute. A long letter was read from Mr. Burke, and another from Mr. Thomas Cleary, a prominent antivaccinator in co. Wexford. It was suggested that if it was a poor man's child the guardians would have prosecuted long ago. After a noisy scene and amidst some stormy exchanges a poll was taken, and it was agreed by 11 votes to 5 to consider the whole matter on that day fortnight.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

GIFT TO ELGIN HOSPITAL.

LORD MOUNT STEPHEN has decided to make Gray's Hospital, Elgin, a gift of 250 shares of the Northern Pacific Railway Company of the par value of £5,000, and paying a 7 per cent. dividend or £350 per annum, on condition that the people of Elgin contribute £5,000. This offer is in response to an appeal which has just been issued by the trustees and managers for more funds.

THE PROPOSED ZOOLOGICAL GARDEN FOR EDINBURGH.

Dr. R. F. Scharff, of Dublin, Secretary of the Royal Zoological Society of Ireland, has visited Edinburgh, on behalf of the Zoological Society of Scotland, to

inspect the various pieces of ground suggested as sites for the Scottish Zoological Garden at Edinburgh. Dr. Scharff, who is well acquainted with the Edinburgh climate, has expressed a strong opinion that it is in no way worse, from the point of view of keeping animals in the open, than the climate of Dublin, where lions, for example, not only live in the open all the year round, but thrive and breed well.

Sanitary Affairs in Lewis.

The annual report of Dr. Murray, of Stornoway, as medical officer of health for Lewis, contains some interesting facts. He emphasizes the necessity for the education of the people in sanitary methods, applicable to their conditions as an essential preliminary to the carrying out of reforms on a large scale. In this connexion he states that since he was appointed to the combined offices of district medical officer of health and school medical officer, he has, in the majority of schools visited, given a Gaelic lecture to the parents and others on the "Prevention of Consumption and the Care of School Children." A hopeful feature of these lectures was that in all the districts visited the women attended in large numbers, and in the case of the senior pupils, who were also encouraged to attend, the salient points were further impressed on the memory by setting the subject of the lecture afterwards as a composition exercise in school. The object in view is to create a "divine discontent" with the present condition of things. Reforms will then follow. Reference is made to the almost phenomenal growth of the tweed-making industry in recent years. In some districts nearly every woman is employed. This necessitates almost constant work inside the houses, often until the small hours of the morning, and there is reason to fear, Dr. Murray remarks, that the health of the women will by and by show deterioration owing to the curtailment of work in the open air. It is pointed out that the closing of schools in most cases fails to prevent the spread of measles or whooping-cough, as the children meet and play at each others' houses, and under conditions more likely to spread infection than at school. The "railiach" (marriage contract) is a fruitful source of infection, as it is a favourite resort for young people. But the church services, Sunday schools, and especially religious meetings in private houses, are potent factors in the spread of infectious diseases.

England and Wales.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

LONDON.

The Treatment of Inebriates.

Before adjourning for the Easter recess on April 11th, the London County Council decided to appoint a deputation to urge upon the Home Secretary the need for legislation with regard to the reformatory treatment of inebriates. The Public Control Committee expressed the view that the indeterminate sentence to a reformatory was the only method of treatment suitable for the confirmed inebriate. As early as the year 1900, however, the Council had urged the unsuitability for treatment at certified reformatories of the weak-minded or "borderland" cases. Experience had proved conclusively that inebriates of the recidivist and feeble-minded type could never be fit for sustained self-dependence. Whilst under treatment at a reformatory they were well conducted, happy, and often touchingly grateful for what was being done for them; it was but a mistaken kindness if, after being restored to health and given some taste of a decent life, they were permitted to return to the misery and degradation from which they had come. The following particulars related to the first 600 cases committed to Farmfield: 19·1 per cent. doing well, 2·7 per cent. did well for a considerable period, 45.5 per cent. relapsed, 15 per cent. could not be traced, 7.7 per cent. transferred or unmanageable, 3.2 per cent. insane, 1.1 per cent. leading an immoral life, 2.7 per cent. dead, 1.5 per cent. still at the reformatory. Although these results were unsatisfactory, it should not be assumed that the Council's efforts had been entirely wasted, as the treatment of the women had been very valuable in many respects. This was shown by the improvement in the general character even of those who had been committed for more than one term of detention in a reformatory. Whilst the law remained as at present it was clearly the duty of the Council to continue to do what was possible for these people, but it would be wrong to acquiesce permanently in such a state of affairs. Although speedy legislation on the whole question dealt with by the Royal Commission seemed unlikely, the Government might be induced to deal with the comparatively small matter of the feeble-minded inebriate. It was, however, quite clear that drastic amendment of the present law was necessary if success was to attend the reformatory treatment of the inebriate. If might be argued that the experiment having been tried for a number of years and having so far failed, the public should not be put to further expense in the matter, but expenditure upon inebriate persons of the criminal and recidivist type was by no means a new or avoidable charge. When allowed the comparative freedom which enabled them to commit repeated offences inebriates were already a serious financial burden upon the community. Their conviction and incarceration cost from £20 to £30 per annum for each case. Provision should be made for the permanent retention of feeble-minded inebriates as suggested by the Royal Commission on the Care and Control of the Feeble-Minded, and the State should bear the whole cost of providing the accommodation and maintenance of all inebriates committed by the courts. The law should be amended to provide—

(*a*) For persons who appeared to be developing into habitual drunkards to be submitted to reformatory treatment at the earliest possible moment after they began drinking to excess; (*b*) for the prolonged detention of inebriates of the criminal and recidivist type who, after ample opportunity of reform, had proved to be insusceptible to reformatory influences; and (*c*) for the institution of a system of reformatory treatment for short periods of three months and upwards of inebriates when they first came within the scope of the law.

The Council approved these recommendations without debate.

Mentally Defective Children.

The Education Committee submitted proposals with regard to the report of the Royal Commission on the Care and Control of the Feeble-minded in so far as it dealt with mentally defective children. Experience gained of the working of special schools for the mentally defective was convincing as to the undesirability of withdrawing such children from public control on their attaining the age of 16 years. Legislation was urgently needed to enable the Council to make provision for children lacking in moral sense, especially elder girls, who were considered unfit for ordinary or special schools. If provision were made only for the latter, accommodation would be required immediately for at least thirty, and might have to be found eventually for 100. The cost for building would be about £150 a child, and for maintenance 10s. a week, an average contribution of 1s. being obtained from parents. The Council had permissive powers to provide institutions for mentally defective children up to the age of 16, but it had no powers to send the children to, or retain them in, such institutions against the will of their parents. Until there was legislation to enable the Council to make provision for such children at least up to the age of 21 years the Committee could not recommend any steps in that direction. It was desirable to send a deputation to the Home Secretary offering to place at his disposal the experience gained by the Council in dealing with mentally defective children in its special schools, and urging that action should be taken, provided it was made quite clear that the Council adhered to the views stated in its resolutions of December 13th last.

(BRITISH MEDICAL JOURNAL, vol. ii, 1910, p. 1880), that any further duties placed on the Council in this connexion should be accompanied by an appropriate grant from the Imperial Exchequer.

On this report, the Finance Committee expressed considerable doubt whether the Education Committee had not under-estimated the number of children for whom provision would have to be made, and strongly deprecated any proposal which would have the effect of placing upon the Council, as local education authority, any further responsibility in respect of feeble-minded children, or of placing upon the Council, in any capacity, such enhanced responsibilities, except under the conditions contemplated by the Council's resolutions of December 13th, 1910—namely, the substantial provision of Exchequer contributions. The General Purposes Committee, reporting concurrently, thought that legislation with regard to persons lacking in moral sense should not be restricted, as the Education Committee suggested, to those under 21 years of age, but should cover all such persons irrespective of age. The Committee submitted the following resolution, which the Council unanimously adopted:

> That it is desirable that legislation should be promoted on the whole question of the care and control of the feeble-minded, and particularly to confer on the Council authority to make provision for persons lacking in moral sense, in accordance with the recommendations of the Royal Commission; and that the Home Secretary be asked to receive a deputation on the subject.

MANCHESTER AND DISTRICT.

STATE AID FOR MATERNITY.

FOR some time past there has been a strong feeling in Manchester that sooner or later there will have to be some national provision for sickness in relation to maternity. The movement received a great stimulus several years ago when Dr. T. Arthur Helme, in his presidential address to the Lancashire and Cheshire Branch of the British Medical Association, advocated a more systematic provision for maternity, pointing out how largely the health of the coming generation depended on antenatal conditions, and how impossible it was for a large proportion of the working women to make proper provision for times of childbirth, the result being an enfeebled motherhood, a high rate of morbidity among both mothers and children, and a high infant mortality. Something has been done by the Health Committees of the Manchester and Salford Corporations by their health visitors, who have as far as was practicable visited pregnant women and given advice as to food and proper care of health during pregnancy, and more particularly as to the care of the infants. This work has been supplemented by voluntary efforts, among which may be specially mentioned what is now called the School for Mothers; it is a place to which expectant mothers are invited, and where some systematic instruction in motherhood is given. An attempt has been made to extend this by appointing medical practitioners to attend the meetings, and it has even been proposed to appoint specialists to make physical examinations of the women and give advice as to their fitness or otherwise for child-bearing. It has generally been assumed that all such work by medical men should be done gratuitously, though it is strictly professional work, the excuse being that no funds are available to pay medical men. Other proposals have been made for the nationalization of the whole medical service, which it is held would be specially beneficial in the case of parturient women.

In view of the intention of the Government to introduce a scheme for sickness and invalidity insurance, the Lancashire and Yorkshire sections of the Women's Co-operative Guild recently held a meeting in the hall of the Co-operative Wholesale Society, Manchester, to discuss the needs of working women in these respects. Miss Llewelyn Davis, the general secretary, opened the discussion by urging the need for a national provision for maternity and for sickness among women. She said that the ordinary wage of from 18s. to 30s. a week was insufficient to allow an adequate sum to be saved to meet such needs, and from the want of proper provision an immense amount of privation and suffering resulted both to mothers and infants. For lack of proper attention women often suffered all their lives, and society suffered great losses by enfeebled motherhood, weakly children, and heavy infant mortality. The expenses incidental to childbirth, she said, averaged from £3 to £5, and there was need for outside assistance. The difficulties in the way of a compulsory contributive scheme included those of securing payments from husbands out of work or ill and men engaged in seasonal trades or only casually employed. Perhaps the simplest and most effective way would be by a grant in aid from the State, to be paid to the municipalities to enable them to provide doctoring and nursing in all instances in which the income was below a certain level. So far from such a scheme being demoralizing, she thought it would tend to create a feeling of greater responsibility, as the condition of public feeling would make parents more anxious to see, when there was no need to pay doctor and nurse, that proper food and clothing were provided. She concluded by moving a resolution calling the Government's attention to "the urgent necessity for making public provision for maternity and for married women's sickness and invalidity." Several speakers expressed the fear that many women would regard such outside help, whether from the State or the municipality, as a charity to be avoided, while others urged the nationalization of the entire medical service. "If it be true," one speaker said, "that every child born is worth £200 to the State, surely the State can afford to provide a mere £5." The resolution was carried unanimously, and it was directed that a copy of it be sent to the Chancellor of the Exchequer.

There can be little doubt that more provision is needed than at present exists in Manchester for this special class of cases. A very large proportion of the working women either engage the cheapest midwife they can obtain or depend on incompetent neighbours to give assistance at the time of their confinements, and an immense amount of suffering results from the want of proper medical attention. Very few of the sick clubs of the district admit women to their benefits, or if they do, it is only for other illnesses, anything connected with pregnancy or confinements being excluded except for special extra fees. The arguments used at the meeting of the Women's Co-operative Guild may be held to show the necessity for further provision for medical attendance during pregnancy and at confinements and for some time afterwards, but no satisfactory reasons were given which would justify a non-contributory scheme for these cases, nor was it shown that State sickness and invalidity insurance would be insufficient to meet all the requirements.

BIRMINGHAM.

HOSPITAL AMALGAMATION.

THE financial position of the Birmingham Maternity Hospital has been a continuing anxiety to the Board of Management since the opening of the institution three years ago. The hospital was opened free from debt, and although great efforts have been made to increase the ordinary annual income by subscriptions, yet in this short time the annual deficiencies have accumulated to about £2,000. The Board did not feel justified in allowing this debt to increase, and therefore approached the authorities of the Birmingham and Midland Hospital for Women to see if an amalgamation could be arranged whereby the latter hospital would take over the entire work of the lying-in charity. The Women's Hospital has consented to do this rather than that the work of the Maternity Hospital should come to an end. In 1910, 1,721 cases of confinement were attended from the Maternity Hospital in the district, and 322 cases were admitted to the hospital, while 45 pupils were trained. In order that the

Women's Hospital may be able to accomplish this additional work another £2,000 a year will have to be added to its income.

BIRMINGHAM MEDICAL INSTITUTE.

The annual report of the Birmingham Medical Institute shows that there are 187 members. The total number of volumes in the library is 14,706, and of these 118 were added during the past year. Of the new books 47 were gifts, 17 purchases, and 54 periodicals bound. Sixty-eight periodicals are supplied to the reading room. Of these 43 are foreign and 25 British; 46 are presented and 22 purchased; 30 are regularly bound and added to the library. Portraits of Lord Ilkeston, M.D., and Dr. Wilson Fox have been presented by Mrs. Rickards. The expenditure for 1910 amounted to £496 and exceeded the income by £12. In the library fund account there was an excess of expenditure over receipts of £18, and in the new book fund account there was a similar adverse balance of £25. By an arrangement with the Birmingham Branch of the British Medical Association the exclusive use of a room in the basement and the general use of the institute has been granted for the conduct of business in connexion with the annual meeting of the British Medical Association to be held in Birmingham in July.

India.

[*FROM OUR SPECIAL CORRESPONDENT.*]

THE BENGAL VETERINARY DEPARTMENT.

THE commencement of veterinary enterprise in the province of Bengal was the foundation in 1892 of the Bengal Veterinary School, which was mainly due to the persistent advocacy and effort of Dr. Kenneth Macleod. The educational arrangements then established have resulted in the provision of a skilled staff, through the agency of which information is obtained regarding the diseases—more especially the infectious diseases—of stock, measures are carried out for the prevention and limitation of epizootics, and the systematic and scientific study of the maladies of horses, cattle, and other animals has been rendered possible. The Bengal Veterinary School has now attained the status of a college, and, under the able management of Colonel Raymond, continues to increase in efficiency and utility. In addition to the duties connected with the college and associated hospital, Colonel Raymond has the charge of the research laboratory, called after him, in which work of high and useful quality is done, has the control of epizootic disease in Calcutta and its vicinity, and the general control over promotion and posting of the staff of the civil veterinary department in Bengal. The report for the year 1909–10, recently published, indicates growing success as regards the number and work of the students, for whose comfort in health and sickness additional arrangements have been made. A football and cricket ground and a gymnasium have been provided. The number of patients treated in the hospital has been larger, and would have been still greater but for the satisfactory circumstance that private veterinary practitioners have settled in the city. The administration of the Glanders and Farcy Act has been conducted smoothly and efficiently, and has resulted in the saving of a large amount of useful animal life. The Civil Veterinary Department, under the charge of Mr. D. Quinlan, is concerned with the investigation of disease throughout the province, the prevention of epizootics, and the treatment of sick and lame animals. Assisted by five inspectors and sixty-two veterinary assistants, forty of whom are itinerary, the superintendent is able to collect valuable information and supply preventive and relief measures throughout the province. There are twenty-six veterinary dispensaries at district head quarters, in most of which good work is being done. Efforts are also being made to improve the quality of stock by systematic breeding, and fairs and shows are inspected with a view to the prevention of epizootics. The shoeing of horses is taught in the college, and forges under competent operatives are at work in many parts of the province, fees being charged for the work done. Post-graduate classes have been arranged in the college, and instruction in dressing, etc., is given to army transport drivers.

LADY MINTO'S INDIAN NURSING ASSOCIATION.

The object of this excellent association is "to provide and maintain a regular service of fully trained and experienced nurses throughout Northern India and Burma." The association has sustained a great loss in the departure from India of its lady president, the Countess of Minto, C.I., and of its honorary secretary, Surgeon-Lieutenant-Colonel Sir W. R. Crooke-Lawless, C.I.E., who have laboured with success to promote its valuable purposes. Their places have been filled by Lady Hardinge and Major F. O'Kinealy, I.M.S. The report for 1910 indicates satisfactory progress. A new branch has been added to the eight branches already in existence for Bengal, with head quarters in Calcutta. The nursing staff, which now numbers 53, has been increased by 5 new members. The number of cases attended to amounted to 447, against 353 in 1909. This total includes 299 medical, 42 surgical, 28 infectious, 3 mental, and 75 maternity cases; 99 applications had to be refused owing to no nurse being available. A new feature in the operations of the association was the despatch of two nurses to prevalence of cholera the number of visitors was Srinagar, Cashmir, during the season; owing to the small, and work limited. The financial position of the association is satisfactory. Government contributes a subsidy of Rs.35,000; the interest of invested money amounted to Rs.16,115; subscriptions to Rs.27,263; fees earned by nursing sisters to Rs.37,570. There is a home committee whose Lady President is Lady Helen Munro Ferguson, which renders material help to the Indian organization in selecting nurses and other ways. Well wishers to this valuable and beneficent agency for supplying skilled nursing to Europeans—official and otherwise—serving and located in India possess, by contributing to the funds of the home committee, a means of practically assisting a most praiseworthy enterprise.

Correspondence.

THE VACANCY ON THE GENERAL MEDICAL COUNCIL.

SIR,—Will you permit us to make use of your columns for the purpose of announcing to the profession, as we are glad to be able to do, that Dr. J. A. Macdonald of Taunton, the present Chairman of Council of the Association, has consented to be a candidate for the seat on the General Medical Council rendered vacant through the much regretted death of Dr. L. S. McManus?

Dr. Macdonald is widely known to the profession as a general practitioner who, owing to his devotion to the advancement of the interests of the medical profession and conspicuous aptitude for public work, has been called upon to fill many important offices in the British Medical Association. As a member, and afterwards Chairman, of the Medico-Political Committee of the Association, as Chairman of the Representative Body, and now Chairman of Council, he has become thoroughly familiar with the needs of the medical profession as affected by the administration of the Medical Acts by the General Medical Council. As himself a general practitioner, he is personally familiar with the disabilities from which the profession at present suffers and the reforms that are needed in various directions, including those which affect the work of the General Medical Council.

We have the utmost confidence in commending Dr. Macdonald to our fellow practitioners in England and Wales as one whose experience and abilities are eminently calculated to further the interests of the profession if

elected to be a member of the General Medical Council.—We are, etc.,

EWEN J. MACLEAN,
Chairman, Representative Body, British Medical Association.
LAURISTON E. SHAW,
President, Metropolitan Counties Branch, British Medical Association.

April 19th.

SIR,—Referring in the *Lancet* of the 8th instant to the vacancy in the General Medical Council caused by the lamented death of Dr. McManus, Dr. A. G. Bateman says that "we must all unite to send to the Council one worthy to follow in the footsteps of Dr. McManus as a *persona grata* both to his colleagues and the Council."

I am pleased to learn that Mr. George Jackson, J.P., a former direct representative, has consented to offer himself as a candidate, and I feel sure that he will, by universal consent, be held to meet in every respect the requirements regarded by Dr. Bateman as essential. Having most efficiently served his professional brethren at the Council for five years, he is thoroughly acquainted with the work; and that his services were highly appreciated by the profession is shown by the fact that at the last election he polled within about seventeen votes of the number recorded for the lowest *successful* candidate.

As I had the honour of occupying a seat at the Council during the five years that Mr. Jackson held office I can bear testimony to the admirable services he rendered to his constituents, and I am satisfied that it would be extremely difficult to find any one better qualified to succeed the late Dr. McManus as a representative of the rank and file of the profession than my former colleague Mr. George Jackson, and I trust that he will be permitted to take the seat he formerly held without the worry and cost of a contested election.—I am, etc.,

GEORGE BROWN,
Late Direct Representative for England and Wales.

Callington, Cormodel, April 18th.

HEART FAILURE.

SIR,—The lectures lately delivered on the above subject by Dr. James Mackenzie, before the Royal College of Physicians, will doubtless receive from the medical profession the appreciation and endorsement they deserve. There are, however, two or three points concerning which I do not feel capable of complacently following the lecturer.

His strictures on "the popular conception of heart failure" as being mechanically produced do not seem to me to shake the value of the popular conception; and the conclusion to which he leads up—namely, that "the back pressure is never the essential cause of the heart failure"—appears as incomplete a doctrine as the old view. It is as though the profession had argued that the reason the horse could not get the load up the hill was because the load was too much for it, whereas Dr. Mackenzie would have us recognize that the real reason was that the horse was not equal to the load. With him the fault is with the horse; with us it has been with the load. The truth, surely, lies in the recognition and combination of both views.

A damaged valve, with resultant back pressure, makes a greater demand on the heart. By hypertrophy the heart may meet it; and if the lesion be not progressive each unit of muscle (there being more muscle) may have no more work than before, and the lesion need not shorten or limit life. But progressive back pressure uses up the heart's capital, unless that be unlimited; and to attribute the cardiac breakdown to the oncoming of "cardiac irregularity," "embarrassment," and "auricular fibrillation," as though these were the primary causes, seems to me inexact and illogical for such cases. There are doubtless many cases in which cardiac breakdown leads to back pressure, but there are also many where progressive back pressure leads to cardiac breakdown. The heart is exhausted prematurely by its effort to adequately maintain the circulation, driving the blood backwards as well as forwards through its own mechanical defects. Its overfilled chambers require a stronger contraction than before to raise the same pressure within them, till the increasing load breaks down the horse.

The two new terms, "rest force" and "work force," are both unfortunate. Dr. Mackenzie says: "The rest force is the minimal force which the heart can exert to maintain the circulation at a level consistent with life." Why call a force which the heart exerts a "rest force"? A force in action may be small, but it is not a *rest* force. Moreover, "rest force" and "work force" are mutually confusing, since they are both working forces. If Dr. Mackenzie had followed the analogy of an army and called these the peace force and the reserve force, his meaning would have been clearer and more accurately expressed. And why use the term "force" where force is not meant? It is not "the minimal force which the heart can exert," but the minimal *energy* which the heart can expend "to maintain the circulation at a level consistent with life" with which Dr. Mackenzie is dealing. Better terms, therefore, would, I think, be minimal (or normal or standard) energy and reserve energy.

Dr. Mackenzie concludes by endeavouring to indicate the uselessness of the "majority of drugs and methods" employed in heart disease. He says:

> When many of these vaunted remedies are carefully investigated their uselessness becomes evident. . . . Pharmacologists have repeatedly examined, with the minutest care, the effects of medicinal doses of strychnine upon the heart in experiment, and have failed to obtain a result of any kind. So it is with a great many other drugs and methods.

Yet, like other people, one can scarcely imagine that Dr. Mackenzie has not put his finger on the pulse of a patient and said, "You are smoking too much; you have been taking alcohol, coffee, or other stimulant." In my experience the effect of a tonic containing strychnine is generally tonic. Whether the heart is unfortunate in alone gaining nothing I cannot say, but will try to find out. In any case the stimulant effect on the heart of an injection of strychnine is easily recognized, and I doubt if our surgical brethren would be wise in hastily ceasing "the preliminary ceremonial rite of a hypodermic injection of strychnine" because of the failures of pharmacologists. Often, too, when I practised at Brides-les-Bains, I observed the beat of the heart decrease by 15 to 20 strokes a minute and keep slow for hours after a patient's immersion in a warm saline bath. To belittle the use of "drugs and methods" for an organ as susceptible as the heart constantly shows itself is, I think, too great an offering to make, even at the shrine of so important a goddess as "Rest."

My high appreciation of Dr. Mackenzie's paper is my chief excuse for having ventured to criticize it.—I am, etc.,

Mentone, April 17th. D. W. SAMWAYS.

FATALISM AND ANTHRAX.

SIR,—The JOURNAL of April 1st contains a short paper on "Fatalism and Anthrax" from the pen of my friend and colleague Dr. William Mitchell. He combats therein the view that the death of a case of internal anthrax is a foregone conclusion, and, conversely, that recovery of a suspected case is a proof of its not having been one of anthrax. How widely this opinion is held I am not in a position to say; Dr. Mitchell says it is the commonly accepted view—and he is probably correct. But he is quite in the wrong when he classes me among those who reason in that way. His only ground for doing so is a very brief newspaper summary of an inquest held last autumn, at which it is alleged I stated that "there was not a single case of lung anthrax known to have been cured by injections of any kind." What I did say was that to the best of my knowledge not a single case of pulmonary anthrax, proved to be such, has been cured by injections of any kind; for I held then, and still hold, that a clinical opinion, especially when based upon conditions permitting of various interpretations, is not the equivalent of scientific proof.

The very extract from the last annual report of the Bradford Anthrax Investigation Board, on an apparent relative immunity among the older "hands," which Dr. Mitchell quoted in support of his own contention, should have given him pause to reflect whether the writer of that extract would be likely to have made the statement attributed to him in a daily paper. That they are incompatible is as clear as noonday. Commenting upon that extract, Dr. Mitchell goes on to say that he knows "of only one way in which immunity against, or diminished susceptibility to, a specific contagion can be

accidentally acquired, namely, by contracting the specific disease in question." He will, I am sure, be among the first to acknowledge that here he has not expressed himself quite happily—that it would have been more correct to have used the term "infection" in place of the word "disease." The introduction of a minimum number of virulent germs is required to produce disease; smaller quantities may affect susceptibility without giving rise to clinical symptoms; and similar effects may result from the introduction of germs of diminished virulence. All this is common knowledge. I have been greatly interested to find occasionally, in my examination of infected wool and hair, strains of anthrax bacilli of markedly diminished virulence towards mice. It may, I think, be permitted to conclude that these weakened strains, when introduced into the human body, will tend to produce milder and non-fatal forms of the disease—as described many years ago by Eppinger—or that, acting purely as vaccines, they will reduce the already moderate susceptibility of man to anthrax.—I am, etc.,

Bradford, April 10th. F. W. Eurich.

SPA TREATMENT IN BRITAIN.

Sir,—In connexion with your note on spa treatment in the British Medical Journal of April 8th, page 832, I should like to say that a special diet chart such as you indicate was drawn up by the Buxton Medical Society several years ago and issued to all the hotels and boarding-houses.—I am, etc.,

Buxton, April 17th. Geo. H. Thompson.

Sir,—If the article under the above heading which appeared in the Journal of April 15th should lead to a discussion in detail on the merits and defects of our health resorts it will not have been written in vain. I take it, indeed, that its strictures on spa management and their limitation to a few points only are intended to elicit apology as well as to provoke further criticism.

Personally I hold that so fundamental are the differences between British and foreign spas that they better lend themselves to contrast than to comparison, and hence I doubt the wisdom of too close an imitation of exotic methods. The climate of our country, while immeasurably superior to that of Central Europe for some categories of invalids, is equally inferior for other categories. With us only in exceptional summers can patients count upon being able to sit in the open air day after day, from early morning till after sundown. On the other hand, our cooler weather practically compels active outdoor exercise while rendering it both beneficial and pleasurable. But there are days on which sitting and sauntering in a public garden is agreeable, and as there are some visitors whose chief demand is for that form of diversion we cannot entirely neglect its chief adjunct—music.

In view, then, of a less demand and of the absence of sources of revenue available abroad, I venture to affirm that British spas are, on the whole, deserving of praise rather than blame. Certainly at four of our health resorts, some dozen in number, commonly ranking as spas, excellent music is provided, while of the hundreds of spas in the wide expanse of Europe how many can be cited where music of ambitious character is rendered by orchestras of metropolitan calibre? Be it remembered, too, in fairness, that at each of the two foreign spas surpassing all others in this respect the number of visitors exceeds that of any two British spas taken together, while funds are provided by a *Kurtax* and the profits of gaming tables.

Though no doubt there are visitors to our spas who would welcome the introduction of æsthetic effects, I suggest that a reform of more capital importance would be the erection of adequate outdoor rain shelters, which would enable invalids to enjoy fresh air on rainy but moderately warm days.

A defect, shared however by our nearest Continental neighbour, is the want of large tracts of land belonging to the spa administration; but this disadvantage arises not from parsimony but from the state of our laws. Until there are facilities for the acquisition of land in advance of present requirements and at normal prices, with provision for recoupment by resale of properly selected sites when values have become enhanced as the outcome of urban improvement, critics from the outside may well be chary in urging municipalities to incur lavish expenditure for the creation of a many-sided health resort.

A reason for lethargy at some of the smaller spas is the unsettled controversy between persons who lay chief stress on immediate gain from trippers, and counsellors who recognize the greater advantage of the deferred but more substantial revenues accruing to a well-equipped health resort. The issue of this conflict depends largely upon the attitude of the medical profession as a whole.

While strengthening the hands of the local practitioners in every effort for reform, let us not only recognize but also proclaim to our colleagues, at home and abroad, that our health resorts, whether spas, seaside, or inland climatic stations, already offer to numerous invalids, British and foreign, specific advantages which cannot be equally well obtained elsewhere.—I am, etc.,

London, S.W., April 18th. Neville Wood.

RENAL CALCULI AND CALCIUM METABOLISM.

Sir,—We must be very grateful to Dr. Benjamin Moore for his valuable contribution to the analysis of renal calculi. I doubt, however, whether the ratio of oxalate of lime calculi to those of uric acid is such as he describes. It certainly does not agree with my own experience or with that of my colleagues at Vittel, where a very large number of calculi are passed each season. This is all the more so as unquestionably a certain number of the uric calculi are redissolved by the more dilute and improved urine during the cure. Some calculi that my patients have passed were stratified on an oxalic nucleus enclosed in a calyx or shell-like envelope of uric acid. If some chemical enthusiast will analyse a continuous series of calculi or their fragments removed, say, at St. Peter's Hospital, we may then gain some reliable statistics of the proportion of the two dominant constituents of renal concretions. Even then we shall only obtain the statistical values of calculosis when this goes on to require operative measures of some kind.

When, however, we study the second part of Dr. Moore's paper I have no hesitation in saying that his conclusions are misleading. At the present time we practitioners are racked by the teaching of two schools of chemical pathologists. One group is urging us to give calcium in a number of different ailments, whilst the other tries to persuade us that calcium is one of the most pernicious substances that can be introduced into the human economy.

Because calcic carbonate is the usual substance of most rock concretions which show some resemblance to renal calculi in pre-chemical days, limy waters were supposed to be bad for people with a tendency to stone. Strangely, this superstition still prevails amongst the public, and with many medical practitioners.

The thesis that Dr. Moore holds is that lime should be withheld in oxalurics. That is "a consummation devoutly to be wished" by the chemist, but is impossible of achievement by the practitioner. No dietary can be planned that shall reduce the calcium element so low as to be insufficient to combine with the few centigrams of oxalic acid excreted daily, even by an advanced oxaluric. Surely if these few milligrams of oxalic acid that are daily excreted are neutralized by the lime salts of our food, any amount of additional lime cannot do further harm.

One of the problems that practitioners have to solve is not to prevent the introduction of calcium salts, but the absorption of exogenous oxalic acid in foodstuffs, or the perverted metabolism of carbohydrates from which the endogenous oxalates are derived. The other problem is to prevent the accretion of the calcic oxalates as a stone in the urinary passages, which will not be done by calcium starvation of our patients. It has been tried and failed.

Few hold in higher esteem than I the teachings of the laboratory, nor am I too recalcitrant to armchair deductions, but these must harmonize with clinical experience. This is not the case. There are two dominant facts that are clearly demonstrated at Vittel, where we use a non-chloride calcareous water. There large numbers of oxalurics resort yearly, and almost without exception the diurnal amount of oxalates is markedly diminished or very frequently disappears. I have patients now under observation who were marked oxalurics, but in whom no return

of that condition has shown itself, notwithstanding frequent urine analyses. These people are constantly drinking Vittel water, and living on a dietary in which lime-bearing food is not excluded. What really did happen was that their cure removed their stock of oxalates and improved their metabolism of carbohydrates so that they form no more oxalic acid.

Will Dr. Moore explain how his hypothesis will fit in with diminution of tophi in people who do the cure? Lastly, are we to abandon mineral water treatment almost altogether? For really very few waters exist that do not contain lime salts.

Before we accept Dr. Moore's ideas, physicians in general will require support by much more substantial evidence.—I am, etc.,

Beaulieu, France. H. J. JOHNSTON-LAVIS, M.D.

PHYSICIAN OR SURGEON?

SIR,—The introduction of salvarsan in the treatment of various diseases has apparently opened up a new field of dispute as to whether "intravenous injection" is a medical or surgical proceeding. Physicians of the present day are in the habit of performing sundry small operations, such as venesection, saline transfusion, serum and intraspinal injections, passing of catheter or bougies (as a diagnostic agent).

It seems that now is a convenient time to ask the question, Is a physician exceeding his powers, or overstepping the line that is drawn between medical and surgical practice, when he cuts down on a vein and injects a dose of a drug?—I am, etc.,

Hull, April 15th. E. H. HOWLETT.

POOR LAW INFIRMARIES AND HOSPITALS.

SIR,—Dr. Johnstone Jervis calls me over the coals (BRITISH MEDICAL JOURNAL, April 8th, p. 846) for saying that the whole spirit of the Poor Law is to do as little as possible for the poor, and that what was missing in the management of the Poor Law infirmaries was "a big heart." I did not say that this was missing in the infirmaries themselves. I did not say a word against the doctors or nurses in those infirmaries, and I never mentioned "London" at all, so that a lot of Dr. Jervis's indignation he might with advantage have kept to himself. He has set up an imaginary windmill to knock his head against. He quotes what I am alleged to have said, and then proceeds to attack me for having said something quite different. At the Poplar Hospital meeting I was speaking upon the suggestion of turning the voluntary hospitals over to the guardians, and I said, "God forbid," and for the reason that the one idea of the Poor Law is to do as little as possible for the poor, and so to save the rates.

I do not speak in ignorance of the subject, as Dr. Jervis is kind enough to suggest. For many years I was an active guardian, first of St. George's and then of St. Marylebone unions. Both of these had most excellent infirmaries, the latter especially, under that good woman, Miss Vincent, one of the pioneers in the work of improving nursing in Poor Law infirmaries. But in those years I learnt the spirit of the Poor Law, and I have seen much of it since. Does Dr. Jervis at all know the attitude of the ordinary relieving officer towards a poor person asking for medical relief? He takes his cue from his masters, the guardians, and the more he can save the rates—in other words, the less he can do for the poor—the better officer he is considered. Is Dr. Jervis utterly ignorant of what any hospital secretary could tell him—the stolid opposition put in the way of transferring an obviously pauper patient from a hospital to the authority in law bound to care for him? An unwillingness to help which is deplorable, and different in every sense from the eagerness of a voluntary hospital to give its help as widely as possible, its only restriction being its accommodation.

Let me, however, accept Dr. Jervis's challenge and deal with the management of infirmaries. I must speak generally, of course, and I hope some indignant guardian of the parish of Stoke Newington will not write and tell us how splendidly his parish infirmary is run.

Is Dr. Jervis ignorant of the great difficulty there has been in the past to get guardians to employ trained nurses? Is he ignorant of the fact that even to-day (I have an instance before me as I write) many guardians think pauper inmates quite good enough as nurses? Is Dr. Jervis ignorant of the death-rate of babies born in the Poor Law infirmaries? Has he ever read the report of the Poor Law Commission, both Majority and Minority, and can he defend the guardians of the poor as hospital managers after doing so?

He invites me "to visit any one of our Poor Law infirmaries," and he is then "sure my mind will be unburdened." As it happens, moved by indignation with what I had read in the Minority Report of the condition of things at the huge Poor Law infirmary in the very town where Dr. Jervis got his M.B.—Edinburgh—I got an order from Mr. John Burns and the Local Government Board at Edinburgh to visit the Craiglockhart Poorhouse, and I found a state of things there which could not be found in the worst managed voluntary hospital in the United Kingdom. I found 800 inmates, all certified by the medical officer to be in need of medical relief. Of these the majority were "owners" of very trifling ailments, some of really nothing at all except a desire to retire from the turmoil of the labour world. But, of these 800, 280 were really ill and on the hospital side, there were 90 patients with phthisis. To 42 of such patients there was one nurse by day and one nurse by night, though they were in wards a considerable distance apart! In the other part of the hospital there was only one night nurse between four wards with eighteen beds in each! There were a lot of children tended by pauper inmates. The operating room, in which very serious operations were done, had one gas jet in it for lighting, and no arrangements for sterilizing dressings! Over this huge place, with its 800 inmates certified to be ill, and its numerous inmates really ill, there was but one resident medical officer, and she was a young lady of 26, holding her first appointment. Her duties were to examine every inmate on arrival, to report as to his or her disease, and whether fit or not to work; to settle diets, treatment; to supervise the arrangements for the children and infants; to attend the confinements—about 30 a year; to make the *post-mortem* examinations; to help the one visiting surgeon in the operations; and to extract teeth. And, lastly, it will hardly be believed, this young woman had under her sole charge the most filthy ward I have ever seen in my life, full of men with bad syphilis!

When I exposed all this, up rose the city fathers and said (as Dr. Jervis says) that everything was perfect, and that they were proud of the care given to the sick, and so on, and they abused me and got abused themselves by the leading articles in the *Scotsman*.

But here were guardians of the poor in the capital of Scotland in the year of grace 1909 defending such management, and similar instances of pride in incompetence prevail all over the country, and are worse in Scotland than in England.

I repeat again, I have never said that the doctors and nurses at Poor Law infirmaries do not do their best, or are not kindness and gentleness itself to the patients. I know to the contrary, but as to the management of these infirmaries, again speaking generally, I want no better witness than Dr. Jervis himself. I convict him out of his own pen, because, writing of these doctors and nurses in Poor Law infirmaries he writes, "They are working often under very hard and trying circumstances, of the nature of which no general hospital staff can have any conception." Exactly so; and who is responsible, may I ask, for these conditions but the guardians of the poor? And this being so, I say again God forbid that the management of the voluntary hospitals should be handed over to the Poor Law guardians, and so to a management which Dr. Jervis spends half his letter in defending and the rest in condemning. If Dr. Jervis wants any further information as to the management of Poor Law infirmaries let him read a most striking chapter in Professor Benjamin Moore's book, *The Dawn of the Health Age*. Chapter IV contains the most damning evidence possible as to the management of a huge Poor Law infirmary with 900 beds in "Cottonport." I wish I had written anything half as strong. Page 79 simply makes one's blood boil, but it is too long to quote. Hoping to hear from Dr. Jervis, M.B.Edin., again.—I am, etc.,

Royston, Herts, April 16th. SYDNEY HOLLAND.

LADY HEALTH VISITORS OR WOMEN SANITARY INSPECTORS?

Sir,—I do not wish to prolong this controversy, but I should like to correct Dr. Lawrence's impression that the health visitors at Croydon do any visiting of women in factories and workshops; that is precisely what they do not do, and what I believe no health visitors ever should do. The health visitor's position is that of a friendly visitor, not that of an inquisitorial official, and if the women of the town have an idea that she is the latter sort of person they will not be nearly so ready to listen to her.

I do not see how the Sanitary Institute can hold any adequate examination for a health visitor. Her hospital career and the testimonials she receives from the matrons under whom she has worked are a far better recommendation than any examination, because they not only speak of her work but of her character, which is of quite as much importance as her knowledge.

I believe in absolute specialization between sanitary inspector and health visitor. The one should be an inspector and the other a qualified nurse. There is usually more than enough work to employ one woman under the Notification of Births Act in even a small town if the work is done well. There is a limit to the visiting a woman can do with profit. I should fix that limit between 2,000 and 3,000. If she exceeds that number it means that the visits are hurried over and the maximum amount of good is not done at each one, consequently her visits make little or no impression. Each baby requires at least two visits—some ailing or dirty ones many more—so that one health visitor should not attempt to cope with more than 1,000 in a year.

Visiting takes up far more time than health authorities have any idea of, and much parsimony is found among most of them. The sooner they realize that good work cannot be done without adequate money spent upon it the better for the health of England. Health visiting thoroughly well done by properly qualified nurses is, I believe, one of the most effectual means we have of improving the national health and physique, and money spent in this way may be looked upon as an investment yielding interest twenty years hence in a stronger, healthier, cleaner, and more self-respecting community.—I am, etc.,

London, W., April 7th. Winifred Warner.

Obituary.

JOHN DUNCAN GREGORSON, M.B., C.M.Edin.,

UPPER ASSAM.

There seems no longer any room to hope that Dr. J. D. Gregorson escaped with his life from the massacre of the party under Mr. Williamson by the Abor tribes on the Assam frontier. The official report states that the expedition started from Jonakmukh on March 15th and reached Sishin on March 23rd; on March 30th Mr. Williamson started for Komsing, leaving Gregorson and the sick coolies behind him. Five survivors from the massacre reached Sishin, where they found no signs of Dr. Gregorson; his "tent had disappeared; only ominous gathering of crows hung over deserted encampment. It is stated that Gregorson heard firing and started up hill to help Williamson, being shown path by Sishin Abors. Somewhere on the path, with treacherous Sishin Abors behind him and Komsing Riu Abors in front, he met his end."

John Duncan Gregorson, who was the second son of Angus Gregorson of Ardrishaig, Argyllshire, was born in July, 1871. He received his education at the Edinburgh Academy, Sedbergh School, Yorkshire, and the Edinburgh University, where he took the degree of M.B., C.M. in 1894. After serving as an assistant to the late Dr. Aymer of Bervie, Kincardineshire, in 1895, and to Dr. Haines of Highgate in 1896, he commenced practice for himself in Leytonstone, Essex, where he remained till 1900. Having always had a desire to travel and a great interest in tropical research and bacteriology, when a favourable opportunity of getting work in Upper Assam occurred he readily availed himself of it. First at Dibrugarh and latterly at Tonsukia, where he resided till recently, he had a large practice, and was medical adviser to a number of tea estates. He took an intense interest in the ethnology of the district, and of the frontier country, and also in the Imperial and geographical questions affecting the frontier. Natural history and the scenery of the Himalayas had also great attractions for him. He was a member of the British Medical Association, and a Fellow of the Society of Tropical Medicine and Hygiene, and on the only visit he paid to this country since going to Assam he spent a considerable amount of his time in study at the London School of Tropical Medicine. Whenever he had time to do so, he travelled in India or to the Sikkim Highlands, and in the winter of 1909–10 he attended the Medical Congress at Bombay. When he left India for Europe, in 1907, he went first to the Federated Malay States, where he had been asked to advise on matters of hygiene and sanitation on certain rubber plantations, and then travelled home by way of China, Japan, and Manchuria, and the Trans-Siberian Railway. He was a man who loved his profession, and his devotion to his patients and his generous and amiable disposition made him a very popular member of the community in his district.

The Dihong River, the valley of which the expedition was exploring, was believed by him and others to be the connecting link between the Sanpo River of Tibet and the Brahmaputra of Assam, though the difference between the levels on the north and south side of the Himalayas is thought to make it probable that there is a great waterfall in the unexplored portion.

Dr. Gregorson appeared to be fully aware of the dangerous nature of the expedition, as he wrote on March 14th, the eve of his departure, to his brother, that he was going into a country from which the few Europeans who had gone had never returned, and that he was making preparations for the worst.

Dr. H. M. Stratford (London) writes: As a former assistant in Upper Assam of Dr. Gregorson's, and knowing him very well, I desire to express my sorrow at the sad fate which has befallen him and Mr. Williamson. Although there is no definite news of Dr. Gregorson's death, there can, I fear, be no possible hope that he has escaped. According to the narrative of a Nepalese survivor, who got away only by keeping to the cover of the jungle and avoiding the paths picketed by the Abors, his chance of escape would be very small, even if he had been warned of the fate of Mr. Williamson's party; in an unknown country, without a guide, and with a vast river between him and safety. Unfortunately, also, clothed in white as he would be, there would be little chance of him escaping notice. The Dihong River at this time of the year would be much swollen from the rains, and would be bringing water down from the hills in a vast torrent to empty into the Brahmaputra. The only means of crossing would be in a dug-out—that is, a scooped out tree stem, the native boat; even when the river is quiet, a dug-out is a very treacherous vessel, and requires two natives skilled in managing it to bring it across. Dr. Gregorson was well known and very highly respected in Dibrugarh, and for a very great distance all round. His fine presence—he was a very big man—and cheerful, kindly disposition, endeared him to all who knew him, and made him very popular and welcome wherever he went. He worked exceedingly hard, travelling great distances in all weathers through the jungles and over rivers to the hospitals on the various tea estates, sometimes not returning to his house at Tinsukia for several days. These journeys were accomplished partly by road, relays of horses being sent on ahead to distant gardens; partly on trolleys, running on lines and worked by coolies, and sometimes on elephants. Dr. Gregorson was always very kind to the natives, and took a great interest in their customs and habits, about which he knew a great deal; they have lost in him a good friend. Very careful and particular in his work, with original ideas on many points, there is no doubt he had acquired an extensive knowledge of tropical medicine, and his death will be a serious loss to Dibrugarh and the neighbourhood. Always ready at a moment's notice to start on a long, trying journey if his services were required, he gave his energies and knowledge ungrudgingly to all who sought them, and many planters on lonely gardens will sadly miss "Greggy," as he was affectionately called.

MAJOR GEORGE LAMB, M.D.GLAS., ETC., I.M.S., BENGAL.

MAJOR GEORGE LAMB, Indian Medical Service, Director of the Pasteur Institute at Kasauli, died in Edinburgh on April 13th, at the early age of 42. He was buried in the Dean Cemetery of Edinburgh on Good Friday. He had been living in Edinburgh for some time, and meant soon to return to India, but some months ago it became manifest that he was stricken with a mortal malady, and a brilliant career was thus prematurely cut short.

Major Lamb was educated at the University of Glasgow, where in 1890 he took the degrees of M.B., C.M. with high commendation, and the degree of M.D. (with honours) and the Bellahouston gold medal in 1902. Soon after entering the Indian Medical Service he became a member of the band of workers associated with Sir Almroth Wright in the researches which have done so much to elucidate the pathology and further the scientific treatment of various infective processes. After going to India he early made his mark by researches on Mediterranean fever as it occurs in the East, and on relapsing fever. Thus it came about that during most of his period of service he was successively appointed to important posts in connexion with scientific inquiries suggested by the Government of India. He was at the head of the laboratory for the investigation of snake poison, and became one of the chief living authorities on the subject. The greatest work of his life, however, was as a member of the Commission for the Investigation of Plague in India. When the labours of the committee were approaching a close, Major Lamb was placed in charge of the Pasteur Institute at Kasauli, where he initiated important modifications in the treatment of hydrophobia. His contributions to scientific literature were numerous. There may be noted, "On the Actions of Snake Venoms" in the *Scientific Memoirs by Officers of the Medical and Sanitation Departments of the Government of India*, 1902–3, and "Observations on Spirillum Fever as Seen in the Monkey" in the same series of publications.

To great originality of mind and indefatigable industry there was joined in Major Lamb a charming personality, whose frankness and cheeriness made friends for him wherever he went, and many in all parts of the world will mourn the premature termination of a career which, even as it stands, was rich in attainment as very few careers are.

WITH reference to the obituary notice of Lieutenant-Colonel SIMPSON POWELL, published on April 8th, p. 849, a correspondent writes: He was of a most retiring disposition, reserved, and slow of speech; but courteous to everyone, and warm-hearted. As a military doctor he was in the front rank. Moreover, at the Louise Margaret Hospital at Aldershot he did a great deal of excellent gynaecological surgery; in this, as in everything he did, he was painstaking and careful to the last degree. Besides his professional work he had a good deal of knowledge of the peoples he had mixed with in the East, their religious customs and arts, and his knowlege of natural history generally, and of botany in particular, was very considerable. I think it may be said that in him were united the finest qualities of two professions—of the doctor and the soldier. His death in his prime will be sorely felt.

Universities and Colleges.

UNIVERSITY OF OXFORD.

DR. ERNEST MALLAM, Litchfield Lecturer in Medicine, has been elected a member of the Committee for the Nomination of Examiners in Medicine, vice Dr. Collier, resigned.

Dr. Reginald Wall and Dr. Theodore Acland have been co-opted as members of the Board of the Faculty of Medicine for the further statutable period of two years.

UNIVERSITY OF LONDON.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.

Prize Distribution.—Lady Minto has consented to present the prizes and certificates on Wednesday, June 14th, at 4 p.m. Mrs. Garrett Anderson, M.D., will preside.

Council and Committee.—Mr. F. D. Acland, M.P., has joined the council of the school, and Mrs. Bryant, D.Sc., Miss A. C. Freeman, and Mr. G. P. Mudge have become members of the school committee.

Scholarship.—The Bostock Scholarship, given by the Reid Trustees, of the value of £60 a year, tenable for two or four years at the London (Royal Free Hospital) School of Medicine for Women, will be awarded on the result of an examination to be held by the University of London, beginning June 5th, 1911. All particulars can be obtained on application to the secretary of the school, 8, Hunter Street, W.C.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

A BALLOT for admission to the Fellowship held on April 7th resulted in Dr. G. E. Nesbitt being declared duly elected.

CONJOINT BOARD IN ENGLAND.

THE following candidates have been approved at the examinations indicated:

FIRST COLLEGE. PART IV (*Practical Pharmacy*).—F. Balkwill, R. S. de C. Bennett, A. V. Boyall, A. Bulleid, T. C. Butler, H. G. Crawford, R. Curle, A. C. L. d'Arifat, J. Dotto, S. E. Y. Elliott, J. C. Ellis, A. G. Evans, H. H. Fairfax, M. A. Farr, C. M. Forster, R. Fowle, A. J. Frädersdorff, E. M. Grace, A. Green, S. M. Hattersley, W. G. Helsby, R. A. Holmes, W. S. Hyde, H. G. G. Jeffreys, W. B. Jepson, C. Kennedy, G. S. Marshall, R. H. Miller, G. W. Mitchell, C. J. Nicholson, J. Owen, R. C. Parry, M. G. Pettigrew, R. C. Poyser, G. L. Preston, S. O. Rashbrook, N. A. Scott, R. Sherman, J. G. Smith, G. Stanger, W. H. A. D. Sutton, D. P. Thomas, P. J. Watkin, W. C. Whitworth, J. H. Wilkinson, R. W. Willcocks, J. E. S. Wilson, M. A. K. Wood, H. E. P. Yorke.

SECOND COLLEGE (*Anatomy and Physiology*).—W. H. Alderton, C. P. S. Allingham, A. D. Anderson, C. V. Aserappa, O. Baier, M. E. Bakry, M. H. Barton, A. C. O. Brown, S. Caplan, T. H. Cresswell, D. L. Davies, R. M. de Mowbray, C. K. G. Dick, A. J. Drew, S. E. Elphick, M. D. Evans, S. S. Greaves, E. R. G. Greville, F. H. Guppy, T. W. Hancock, W. R. H. Heddy, C. L. Herklots, H. G. Hockridge, W. E. Ison, F. E. Johnson, T. C. Kidner, F. W. Lawson, H. Mather, R. C. Matson, C. H. Medlock, N. M. Mehta, A. L. Miller, A. V. Moberly, H. N. Morgan, L. E. Napier, H. F. Overend, C. F. Pedley, G. S. Phillips, S. V. P. Pill, J. Precopoulos, D. Ram, H. Rimington, A. R. Sami, E. H. S. Scarr, F. Sykes, T. R. Trounce, J. B. Vaidya, V. C. W. Vickers, G. W. Watson, G. H. D. Webb, R. Williams, S. Wilson, A. K. S. Wyborn.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examinations indicated:

FIRST COLLEGE.—W. H. Wray, F. A. V. Denning, S. N. Toulmin, P. Milnes, Q. Stewart, A. F. Readdie, C. E. S. Runciman, T. S. Nair, and B. Singh.

SECOND COLLEGE.—B. S. Raj, R. Kaushosh, C. M. G. Elliott, A. I. Clark, *G. Hardie, R. Dorset, A. C. Fleming, C. Cosgrove, C. Dolan, and K. R. Mehta.

THIRD COLLEGE.—W. Ainsley, W. C. Davis, R. C. Mitter, R. S. Agrawal, A. B. Bull, C. H. N. Baker, E. M. Marcar, Mary Lyon-Mercado, A. F. D'Souza, H. C. Sutton, B. L. Shome, G. R. Vohra, J. N. Clark, C. C. Bose, W. P. Over, J. P. Carroll, L. C. Mascarenhas, J. G. Lessey, Kathleen Wall, and R. Trotter.

FINAL.—C. A. O'Driscoll, J. J. Dykes, N. K. Wilson, R. G. Walker, W. Ashworth, R. S. Agrawal, D. A. Macpherson, C. Mallikarjunarao, W. F. G. Scott, and R. Parry.

* With distinction.

CONJOINT BOARD IN IRELAND.

THE following candidates have been approved at the examinations indicated:

FIRST COLLEGE.—G. A. Campbell, J. V. Coghlan, W. J. Dunlop, B. Glasson, S. E. Gordon, D. Kelly, W. G. McConnell, G. M. Moffat, J. O'Brien, D. V. O'Connor, B. O'C. Redmond, J. Ryan, H. R. Wright.

SECOND COLLEGE.—*R. A. Austin, *M. Shipsey, *R. P. Weldon, J. Cohen, B. J. Cusack, J. D. Hamilton, F. J. S. Kennedy, M. P. Lee, A. C. McQuaide, F. P. B. McTavish, W. Morrow, D. Mullin, W. S. Sullivan.

* With honours.

The Services.

INDEPENDENT MEDICAL PRACTITIONERS IN INDIA.

AT [the meeting of the Imperial Legislative Council at Calcutta on March 17th the Honourable Surgeon-General Lukis, C.S.I., Director-General of the Indian Medical Service, delivered the following speech:

"Mr. President, with your permission I wish to say a few words on the subject of the encouragement of independent medical practitioners in India. What I propose to do to-day is to point out to the Council the various steps which the Government has already taken to improve the position of those gentlemen, and also to indicate the lines on which they might, if they chose to do so, help themselves. I wish it to be clearly understood that I am not to be regarded in this respect either as the mouthpiece of Government or as holding a brief for the Indian Medical Service. I speak merely as one who has been a teacher of medicine in this country for twelve years, and whose interest in the progress of medical science in India and

in the improvement of the status of Indian practitioners is as keen as that of Mr. Gokhale on the equally important subject of primary education. Now if we study the position of independent practitioners in India, we observe that they labour under three disabilities which are not shared by their professional brethren in western countries. In the first place, private medical students, after obtaining their degrees or diplomas, are practically debarred from filling the posts of house-surgeons and house-physicians in the large Government hospitals, these appointments being in most cases reserved for civil assistant surgeons, and they are thus prevented from gaining much clinical experience before going out into the world to practise on their own account. This is a very severe handicap, and to remedy it the Government of India has proposed, and the Government of India has agreed, that in future the appointments of house-surgeon and house-physician in the large Presidency Government hospitals shall be thrown open to the best students of each year, whether or not they propose to enter the Government service. This is a very great boon, and it will, I hope, be taken full advantage of by the coming generation of Indian medical men. The second disability is that there are at present no facilities for post-graduate study such as exist in connexion with all the large medical schools in England and continental Europe. The result of this is that a young man going to practise in a remote mofussil station, where he is probably overworked and underpaid and where he has neither the leisure nor the facilities for study, fails to keep abreast of the advance of medical science and very quickly lags behind the race. The Government of India recognizing what a drawback this is, and how it militates against a successful career, is now formulating a scheme for starting in Calcutta a school of tropical medicine affiliated to the Calcutta Medical College and for the introduction of a diploma in tropical medicine in connexion with the Calcutta University. This school of tropical medicine will afford facilities both for post-graduate study and for research work and it will be open to all properly qualified medical practitioners. The young doctor from the mofussil will thus have a chance of coming back to hospital and furbishing up his knowledge, while those who wish to carry out original work will have every opportunity of doing so in the research laboratories attached to the school. The third disability—and this is one that we hear most about—is that medical practitioners are unable to obtain professorial and hospital appointments in the large Government medical colleges. This is, I admit, a very grave disability, and one which has the serious consideration of the Government, but in this connexion, I should like to invite the attention of the hon. members to some very sensible advice which was given to Bombay medical men by Dr. Temulji Nariman when he was entertained at dinner by over one hundred Indian medical men on August 13th, 1909. In the course of his speech Dr. Nariman said, 'If Indians wish to bring into existence a profession of native doctors they should not hanker after one or two minor professorships in the Grant Medical College, but should all unite and set to work to found a medical college of their own. It is only when we have a large number of teachers with hospital experience that we shall be in position of an independent medical profession, and by perseverance, industry, and self-sacrifice we are bound to produce men who will adorn our profession and leave their names to posterity as those of Jenner, or Harvey, or Lister or Simpson. Founding hospitals alone will not elevate our status. We must have our own college, with laboratories where some of our best men can carry on original research work. It may take years for its completion, but let us make a beginning.' This was a most wise and statesmanlike speech, and I beg of my Indian colleagues to give it the careful consideration it deserves. Let them not be content merely with obtaining a proportion of the professorships in the Government medical colleges; let them all unite and found well-equipped medical colleges of their own. This is a subject that is worthy of the consideration of the wealthy and charitable public, and I can assure them that by encouraging the establishment of unofficial medical colleges and schools, but conducted by independent medical practitioners, they will be conferring a boon not only on the medical profession but also upon the country at large. It is well known that the Government colleges and schools cannot provide for more than a fraction of those who apply for admission. In Calcutta alone about two hundred candidates are rejected every year. There is, therefore, ample room for well-equipped and adequately staffed unofficial medical colleges and schools, professorships at which would afford the experience which can only be derived from work done in institutions of this class. In an admirable speech which we all listened to with such interest yesterday, Mr. Gokhale, when pleading the cause of primary education said, 'This is a case in which it is necessary that there should be cordial co-operation of the Government with the public.' May I be allowed to reverse the term, and to say that this is a case in which it is necessary that there should be the cordial co-operation of the public with the Government. Personally I look forward to the day when in every important town of the Indian Empire we shall have a well-equipped non-official medical college staffed entirely by Indians working in friendly rivalry with the Government medical colleges, each institution striving its hardest to show the best results at the university examinations. As Dr. Nariman said, this may take years to accomplish, but I earnestly hope that before my time comes to leave India I may see that an accomplished fact, at any rate in Calcutta and Bombay. If anything I have said to-day should induce the leaders of the people to take an active interest in this scheme I shall feel that I have been justified for having trespassed so long upon the patience of the Council."

ROYAL ARMY MEDICAL CORPS.

EXAMINATION FOR PROMOTION.

India.

THE following were the successful candidates at the November examination for promotion of Majors of the Royal Army Medical Corps in "Technical Subjects," Part I, Appendix XIV, King's Regulations:

Majors G. St. C. THOM, M.B., and E. B. STEEL, M.B., Part I, Subject 2, Appendix XIV, King's Regulations. Already passed in (*d*) ii. Exempt Part II, Appendix XIV, King's Regulations.

Majors F. E. GUNTER, M.B., E. W. BLISS, H. G. MARTIN, and G. B. CRISP, (*d*) ii. Have yet to pass in Part I, Appendix XIV, King's Regulations.

Capt. W. DAVIS, (*d*) ii. Already passed in (*h*).

Capts. T. C. LUCAS, M.B., and H. T. WILSON, (*d*) ii. Have yet to pass in (*h*).

Lieut. G. PETIT, (*d*) ii and (*h*). Has yet to pass in (*b*).

Lieut. J. B. HANAFIN, F.R.C.S.I., (*d*) ii and (*h*); .8 in (*h*). Already passed in (*b*).

Lieut. R. F. O'T. DICKINSON, (*h*) i and ii. Already passed in (*b*), (*d*) ii, and (*h*) iii.

Lieut. C. P. O'BRIEN-BUTLER, (*d*) ii. Already passed in (*b*) and (*h*).

Lieut. J. E. ELLCOME, (*d*) ii and (*h*). Already passed in (*b*).

Lieut. F. H. BRADLEY, (*d*) ii and (*h*). .8 in (*h*). Already passed in (*b*).

Lieut. B. VARVILL, (*d*) ii and (*h*). Already passed in (*b*).

Lieut. J. W. HOUSTON, M.B., (*h*); .8. Already passed in (*b*) and (*d*) ii.

Lieut. A. SHEPHERD, M.B., (*h*). Has yet to pass in (*d*) ii. Already passed in (*b*).

Lieut. F. B. DALGLIESH, (*h*) i and iii. Already passed in (*b*), (*d*) ii and (*h*) ii.

Lieut. C. E. L. HARDING, M.B., (*d*) ii and (*h*). Already passed in (*b*).

Lieut. T. S. EVES, M.B., (*h*) i and ii. Already passed in (*b*), (*d*) ii, and (*h*) iii.

Lieut. A. H. T. DAVIS, (*h*). Has yet to pass in (*d*) ii. Already passed in (*b*).

Lieut. J. S. MCCOMBE, M.B., (*h*). Has yet to pass in (*b*) and (*d*) ii.

Lieut. W. J. TOBIN, (*h*). Has yet to pass in (*d*) ii. Already passed in (*b*).

Lieut. R. O'KELLY, (*d*) ii and (*h*). Has yet to pass in (*b*).

Lieut. J. B. JONES, M.B., (*h*); .8. Has yet to pass in (*b*) and (*d*) ii.

[All the above-mentioned have yet to pass in a "Medical Staff Tour," Part II, Appendix XIV, King's Regulations]

Medico-Legal.

WORKMEN'S COMPENSATION ACT.

Damage to a Blind Eye.

THIS case, Ball *v.* Hunt and Sons (Court of Appeal, March 19th), raised a very interesting question as to whether mere disfigurement amounts to incapacity. It appeared that Ball about fifteen or sixteen years ago was struck in the left eye by a piece of steel, and three years later the sight of the eye was altogether lost; he had, however, been able to follow his occupation at full wage. Ball entered Messrs. Hunt's employment on September 1st, 1910, and seven days later, while he was chipping some brickwork, he was struck in the left eye by a piece of brick. Inflammation supervened, and the left eye had to be removed. Compensation was paid for a time, and then arbitration proceedings followed, and the county court judge gave his decision in favour of the employers, holding that the incapacity from which Ball suffered was really due to the first accident to his left eye some sixteen years previously, although he said that the removal of the eye might have stopped Ball's chance of employment. The Master of the Rolls thought that the appeal should be dismissed. Speaking generally, when the accident had caused only disfigurement as distinct from incapacity, the claim for compensation did not come within the Act. In the present case incapacity to work was in no sense due to the accident in September. Lord Justice Fletcher Moulton held a different opinion, and thought that the accident of September came within the Act, and that the appeal, therefore, should be allowed and compensation granted. Lord Justice Buckley agreed with the Master of the Rolls, and the appeal therefore, by a majority of the court, was dismissed.

Medical News.

AT the meeting of the Medico-Legal Society on Tuesday next at 11, Chandos Street, W., Dr. F. J. Waldo, Coroner for the City of London and the Borough of Southwark, will read a paper on the ancient office of coroner, at 8.30 p.m.

THE Royal College of Physicians of Edinburgh has appealed to the Court of Session from the decision of the Lord Lyon King of Arms that he has jurisdiction to adjudicate on the plea of precedence made by the Royal College of Surgeons of Edinburgh.

AT the meeting of the Illuminating Engineering Society at the Society of Arts, Adelphi, on Monday next, at 8 p.m., papers on the ratio of light to illumination will be read by Mr. Haydn T. Harrison, and on the effect of wall papers upon illumination by Mr. P. J. Waldram.

MR. FREDERICK J. FLOWER, M.R.C.S.E., L.S.A., has, after forty-five years' service as Poor Law Medical Officer, resigned his post of Medical Officer and Public Vaccinator of the Warminster Workhouse and Warminster and Cowley districts of the Warminster Union, which appointment he has held since October, 1881.

THE Medical Section of the Royal Society of Medicine will hold a discussion on "The After-History of Cases of Albuminuria occurring in Adolescence," to be opened by Dr. J. F. Goodhart, on Tuesday next, at 5.30 p.m., at 15, Cavendish Square, W. Among those who intend to take part in the discussion are Dr. West, Dr. Tirard, Dr. Saundby, Dr. Clement Dukes, Dr. Herringham, Dr. Collier, Dr. Hale White, Dr. Armstrong, Dr. Garrod.

A SERIES of demonstrations of specimens in the museum will be given in the theatre of the Royal College of Surgeons of England during April and May by Professor Keith and Mr. Shattock. Professor Keith will deal with: (1) Spina bifida; (2) meningocele and other congenital deformities of the brain and membranes; (3) hydrocephaly, microcephaly, and oxycephaly. Mr. Shattock will demonstrate: (1) Actinomycosis, leprosy, etc.; (2) the biology of malignant growths; (3) diseases of voluntary muscle, cartilage, bursae. Professor Keith's three demonstrations will be given on Fridays at 5 p.m., beginning April 21st. Mr. Shattock's three demonstrations will be given on Mondays at 5 p.m., beginning on April 24th.

THE seventh South African Civil Surgeons' dinner will take place on Thursday, June 1st, at the Imperial Restaurant, Regent Street, W., when Mr. G. L. Cheatle, C.B., will take the chair at 7.45 p.m. Field-Marshal Lord Kitchener will be the principal guest, and the Honorary Secretaries, Mr. C. Gordon Watson and Mr. F. E. Fremantle, express the hope that all those who served as civil surgeons or dressers in the South African war will make a special effort to attend this dinner and give a warm welcome to their former Commander-in-Chief. Notices will be issued to all on the honorary secretaries' list by the end of April. Those who do not receive such intimation are asked to communicate with one of the honorary secretaries at 123, Harley Street, W.

THE second biennial congress of the Far Eastern Association of Tropical Medicine will be held in Hong Kong next year from January 20th to January 27th. The association, formed to promote the science and art of tropical medicine in the Far East, is international. Its president is Dr. J. Mitford Atkinson, principal civil medical officer of Hong Kong. Its vice-presidents are Dr. W. G. Ellis (Straits Settlements), Dr. J. de Haan (Java), Dr. Victor G. Heiser (Philippine Islands), Dr. H. Campbell Highet (Siam), Dr. Neil Macleod (Shanghai), Sir Allan Perry (Ceylon), Professor G. Shibiyama (Japan), Dr. J. Staby (Tsingtau), and Professor Yersin (French Indo-China). It is proposed to classify the papers so as to give, as far as possible, a day to each of the following: (1) Protozoology, helminthology; (2) cholera, plague, leprosy, tuberculosis; (3) tropical fevers, including malaria, beri-beri, dysentery; (4) surgery, obstetrics, infantile diseases; (5) climate, hygiene, sanitation. The circular issued by Dr. Francis Clark of Hong Kong, Secretary-Treasurer-General, states that the average temperature in Hong Kong during the month of January is about 62° F., while its range may extend from 80° F. on a warm day to 40° F. during a cold night, so that visitors from more tropical regions should provide themselves with warm clothing. He adds that a suitable social programme will be arranged for the entertainment of visitors, and that the subscription to the association, 10s. 6d. (6 dollars Hong Kong currency), is now due, and that no further subscription will be required until 1913.

Letters, Notes, and Answers.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

J. D. asks advice as to the treatment of a perineal hernia in an old woman. It bulges the perineum on the right side, and causes considerable discomfort, especially at stool.

TEACHING OF VOLUNTARY AID DETACHMENTS.

D. B. asks for a small book on (1) military surgery and (2) military nursing or hospitals, in connexion with the teaching of a voluntary aid organization.

*** "D. B." will probably find all that he wants to know for voluntary aid instruction in *Royal Army Medical Corps Training*, a new edition of which is, we understand, in the press (Wyman and Sons; approximate cost, 1s.); *First Aid to Injured and Sick*, by Warwick and Tunstall (J. Wright and Sons, Limited, 1903; 2s. 6d., paper covers 1s.); and *Military Nursing*, by Major and Mrs. Hassard (H. Frowde, Hodder and Stoughton, 1910; 3s. 6d.) might also be consulted. If "D. B." wished to go more deeply into military surgery he might look at *Gunshot Wounds* by Major Spencer (H. Frowde, Hodder and Stoughton, 1908; 5s.). There is also an advanced manual on military surgery, *Wounds in War*, by Colonel Stevenson (Longmans, Green, and Co., 1910; 16s. net.). The management and control of military hospital establishments will be found in *Regulations for the Army Medical Service* (Wyman and Sons, 1906; price 6d.); and the duties of each appointment are detailed in *Standing Orders, Royal Army Medical Corps* (Wyman and Sons, 1907; price 1s.).

MATERNAL SYPHILIS.

R. C. writes: A woman married at the age of 21, and subsequently had three abortions at the third, fourth and eighth month respectively; the cause presumably specific. The husband then died. She developed no other symptoms, and received no treatment. Now, after five years' widowhood, she proposes to marry again. She is 31 and apparently in perfect health. Does the second husband run any risk—that is, if syphilis was the cause of the abortions?

*** Syphilis is by no means the only cause of repeated abortion. When our correspondent, then, writes of the abortions as being "presumably specific," we infer that he has other sources of information at command, such as the state of health of the first husband, which he has not communicated to us. Such information might have materially assisted in forming an opinion on the point submitted. Assuming a syphilitic origin for the abortions, there are three views currently held as to the relations existing between a mother and her tainted offspring. One, which has attracted renewed attention of late in certain quarters, is that no mother can conceive with such offspring without the previous incurrence of syphilis by herself. Another is that a previously healthy woman may conceive with a tainted fetus from a syphilitic partner, but in such a case she becomes herself affected from the fetus, by "return shock" through the placenta (syphilis by conception). A third view, and one more widely held, perhaps, than any of the others, is that a mother may bear a succession of syphilitic infants without becoming affected herself, and, indeed, may gain immunity to the disease from the absorption of products generated by the fetus in utero. Of course, those who hold either of the first two of these views would regard the incurrence of syphilis by the second husband in our correspondent's case as a more probable, or rather possible, event than those who uphold the third. But we would place ordinary experience before any other considerations, either theoretical or proven, and are of opinion that the contraction of syphilis from an apparently healthy woman, with no evidence of syphilis against her beyond the fact of the three successive abortions, must be so extremely exceptional an event that any risk thereof might fairly be discounted.

ANSWERS.

DR. BLAIKIE (Edinburgh) thinks "Haemorrhage" will find *Practical Nursing for Male Nurses in the Royal Army Medical Corps and Other Forces*, by Major E. M. and A. R. Hassard (Oxford Medical Publications, 3s. 6d.), a most suitable book for the purpose for which he requires it.

NOCTURNAL ENURESIS.

DR. HERBERT C. MAJOR (Jersey) writes: "J. J." might try the method of treatment described by Professor Stumpf some time since (*Bulletin de thérapeutique*). Stumpf recommends that the patients should sleep with the head lower than the pelvis, thus creating a mechanical obstacle to the passage of urine, which then no longer irritates the urethral sphincter. He reported several cases—children, also one adult—successfully treated in this way. The duration of the treatment was about three weeks, after which the normal position in bed could be resumed.

DR. SANDERSON MELLOR (London) writes to recommend "J. J." to try tinct. lycopodii, commencing with 20 minims, and gradually increasing the dose to 45 or 50 minims morning and night for a week or ten days. He has met with several cases that have been very considerably benefited by the above treatment.

DR. H. J. THORP (Ipswich) writes: In reply to "J. J.," the first importance to correct any manifest deviation from the ordinary standard of health; secondly, administer belladonna persistently—small doses suffice at first—6 to 12 minims of the tincture every afternoon and evening. In the second and third weeks of treatment the dose to be increased one-fourth; in the fourth and fifth week the original dose is raised a third or half.

REMOVAL OF SUPERFLUOUS HAIR.

DR. A. HOWARD PIRIE (London) writes in answer to "J. F.": If electrolysis cannot be carried out at the rate of 70 to 100 hairs at each sitting, and there are more than about 1,000 hairs present, he should try *x* rays according to the method described in the BRITISH MEDICAL JOURNAL, August 27th, 1910, for the destruction of sweat glands, a method which has now been confirmed by many observers and is well established. In the writer's hands the same method carried out for superfluous hairs has been successful. One girl treated thus had a beard like a man. In her case one dose was given to make all the hair fall out. After a month, when the hair had fallen out, and all reaction had subsided (for it is usually necessary to get a little reaction for epilation on the face) another epilation dose was given on the now hairless skin of the face, and this was repeated each month for six treatments. The part was then left untreated. It is seven months since the last treatment, and the hair has not begun to grow. She was warned that telangiectasis might follow, but up to the present it has not developed.

LAVATORIES FOR WOMEN.

DR. JNO. BROWN (M.O.H. Borough of Bacup) writes: In reply to your correspondent on the above, if he will write to the Secretary of the Women's National Health Association, 3, Princes Street, Hanover Square, London, W., he will get further information. There are very few towns that provide free lavatories for women. The injustice to women is freely admitted. From inquiries which I have made I am glad to find that some of the more progressive towns are taking steps to remove this injustice. I brought this matter before my health committee last year as a sanitary question and one of justice to women. One free watercloset was granted. No doubt if other medical officers of health were to press the question something would be speedily done.

TUBERCULIN FOR EARLY PHTHISIS.

DR. E. W. DIVER (London) writes: In reply to "L.," one ten-thousandth of a milligram of T.R. is a safe dose to begin with. If practicable the patient should remain in bed for fully twenty-four hours after the injection, and the temperature taken (in recto) every four hours. If this dose produces only a slight reaction it may be repeated in seven or eight days. If no reaction then occurs one eight-thousandth of a milligram may be given after a similar interval, and, generally speaking, the strength may be *gradually* increased and the intervals extended to about ten days or a fortnight. The information afforded by estimation of the opsonic index will be found useful, and a record of the patient's temperature during a day in bed before the injection will prove useful when estimating the importance of a subsequent rise. The patient should be under the best hygienic conditions during the period of treatment, preferably in a sanatorium; and it should be remembered that patients vary in susceptibility to tuberculosis, also that the same patient's susceptibility may vary at different times.

LETTERS, NOTES, ETC.

DR. ROBERT WISE (London, N.) writes: Probably many medical men have had a case where a child swallowed an india-rubber teat from a feeding bottle. For the sake of those who have not had such a case I would like to state that a child 5 years old swallowed a teat (1½ in. long), and exactly fifty-five hours later the teat was passed per anum with a little blood and faeces. Whether this always occurs I do not know.

CONTROL OF VENEREAL DISEASES.

DR. H. M. WILSON (London) writes: Those of your correspondents who advocate the Contagious Diseases Acts, or any similar measures, seem to have shared Rip Van Winkle's cave for the last twenty years. Mr. Stritch bases his letter on the report of the Select Committee of 1882, but since then much water has run under London Bridge. May I, in particular, direct attention to three facts:

1. The Contagious Diseases Acts were definitely repealed in 1886, and since then the statistics of venereal disease in the army—the only reliable statistics available—show a steady and continuous decrease. In 1909 the admission-rate was 66 per thousand, only about a quarter of what it was in 1882 under the Acts. That is a fact which should be borne in mind when estimating the value of the 1882 report.

2. The semi-official International Conferences held at Brussels in 1899 and 1902, which had before them a vastly greater mass of evidence than was available to any purely English committee, were unable to report in favour of State regulation, or of any other compulsory measure. Many foreign experts confessed the failure of the system, and the almost unanimous tendency was to rely on education and on better facilities for free and voluntary treatment.

3. A French Extra-parliamentary Commission (equivalent to a Royal Commission in this country), appointed in 1903, reported three years later, after a most exhaustive inquiry, condemning absolutely the existing system of Réglementation and all other compulsory methods, and advising that the whole subject should be dealt with by the common law. Political considerations have hitherto prevented action being taken on this report.

Two of your correspondents advocate notification, and state as one of its advantages that medical men could be compelled to warn each patient of the danger of infecting others. It does not clearly appear why medical men should wait for notification before they can do this. I understand that at the London Lock Hospital all out-patients receive a printed slip pointing out the precautions to be taken for their own sake and for the protection of others. This would seem to be a plan which might with advantage be adopted for out-patients in other hospitals and dispensaries.

THE EXPRESSION OF THE COLOUR BLIND.

LAST year we had occasion to publish three communications on the subject of colour blindness from Dr. G. H. Taylor, Medical Officer of the Government Railways in New South Wales, and one of them was the subject of criticism by Dr. Edridge-Green. We have now received a further communication from Dr. Taylor in which he reviews again the whole subject. As, however, his arguments cannot satisfactorily be followed by any one not having the original documents before him, we content ourselves with summarizing the contents of this further letter. In point of accuracy of results, Dr. G. H. Taylor finds a modified Williams's lamp and an Edridge-Green lamp to be practically equal, but considers it more satisfactory to work with the former. For railway employees, however, a daylight test is also necessary, and he knows of none which is an improvement of Holmgren's method. He has detected by this method and confirmed by the Nagel method cases of colour blindness of a dangerous kind which passed without mistake both the lantern tests mentioned. He believes that his view that colour blindness can be predicated from a peculiar facial expression will eventually be generally accepted, for he has demonstrated the existence of such an expression to the satisfaction of many intelligent and trained minds in Sydney.

A THIGH REFLEX (?)

DR. A. J. MANASSEH (Brumana, Beyrout, Syria) writes: I was interested to notice this morning in our out-patient department a reflex phenomenon in a patient, and I thought it would interest some of the readers of the BRITISH MEDICAL JOURNAL to hear of it. The patient was a man of about 45, who came to consult me for pain in his right thigh and leg due to sciatica of a mild type. He told me he had noticed that in rubbing the right leg with turpentine oil he experienced a most unpleasant feeling in his stomach, and he had a good deal of flatulence at the same time. I was interested to hear of this and tried rubbing his right thigh and leg with my hand over his clothes, and very soon after he began to have flatulence which was not pleasant to the patient. I rubbed the other leg, but without any similar result. It will be interesting to hear whether others have met with similar experiences.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
A page	8	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postes Restante* letters addressed either in initials or numbers.